RECLAMATION
Managing Water in the West

TRUCKEE RIVER BELOW DERBY DAM RIPARIAN ECOSYSTEM RESTORATION

Environmental Assessment
Washoe and Storey Counties, Nevada

U.S. Department of the Interior
Bureau of Reclamation
Lahontan Basin Area Office
Carson City, Nevada

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TABLE OF CONTENTS

LIST OF EXHIBITS

1 INTRODUCTION

1.1 Background

In compliance with the National Environmental Policy Act (NEPA) of 1969 (as amended), the Bureau of Reclamation (Reclamation), Lahontan Basin Area Office, and the Cities of Reno and Sparks, Nevada, (Cities) under a Reclamation Desert Terminal Lakes grant, are proposing a vegetation and streamside restoration project on the Truckee River below Derby Dam. The goals of enhancing the riparian corridor are: 1) to provide a more natural, functional condition of the river; 2) to encourage native vegetation recruitment to improve fish habitat and; 3) to improve overall water quality. By using vegetative plantings, water temperature extremes in the river should be reduced and dissolved oxygen content should be increased over the long term. This Environmental Assessment (EA) evaluates the effects of riparian vegetative restoration on environmental resources of the Truckee River for the 0.7 mile reach below Derby Dam, and the relationship of this proposed action to other projects and undertakings.

The Truckee River Basin encompasses an area of approximately 3,060 square miles (1,958,400 acres) in California and Nevada. The basin stretches in a generally north by northeast direction from Lake Tahoe, located in the Sierra Nevada Mountains on the border between California and Nevada, to Pyramid Lake, located approximately 50 air miles away in the desert of northwestern Nevada. Connecting this alpine source lake to the basin's desert terminal lake is the 105-mile long Truckee River. As a major sub-basin within the Truckee River Basin, the total drainage area of the Lake Tahoe Basin (including Lake Tahoe and its tributaries), is approximately 506 square miles (323,840 acres), and comprises 16.5 percent of the Truckee River Basin's total area (Taylor, 1997).

Management of water resources along the Truckee River in California and Nevada includes several in-line diversion dams. While effective at artificially raising water surface elevations to divert water, these structures affect natural flow regimes and fluvial geomorphic processes of the water course. Diversions of water for irrigation in the spring and increased return flows in the late summer alter the natural hydrograph which can adversely affect natural vegetative recruitment and fish passage. Impounded backwater behind these in-line structures slows velocities, impeding sediment transport necessary for the development of natural channel configurations. (See Exhibit 1). These diversions also create unnatural flows and sedimentation in the Truckee River channel that affect resident and migratory fish, including threatened and endangered species.

One such diversion structure located on the Truckee River, 20 miles east of Reno Nevada, is the Derby Dam. The dam was completed in June, 1905. Diversion of water from the Truckee River at the dam is governed by Reclamation's rules and regulations for operation of the Newland's Project. These procedures provide for necessary irrigation water deliveries through the Truckee Canal to meet the needs of the Newlands Project, but ensure that the use of Truckee River water is minimized and reliance on the Carson River for Newlands Project water supply is maximized.

Flow modifications and obstruction to sediment have created a wide, relatively shallow channel below the dam. This channel configuration creates a disconnection between the rock channel fishway and natural fish migration. In addition, this wide, shallow channel experiences higher than normal solar gains during low flow summer months, producing warm, low oxygenated water. Shaded riparian aquatic habitat is diminished as the channel width exceeds 100-feet in some sections.

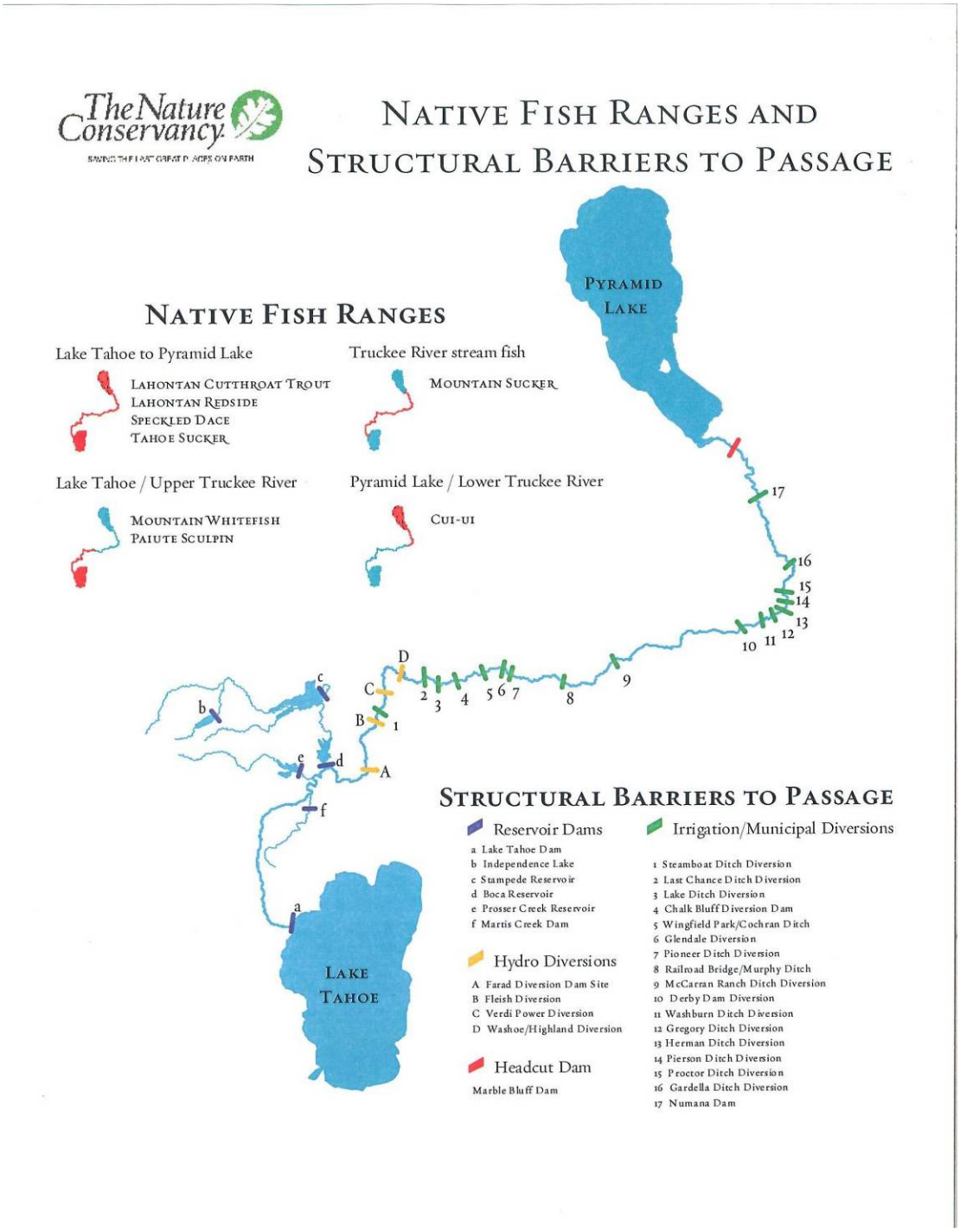
The existing condition of the reach below Derby Dam is a stable, armored, wide, shallow channel. During summer months, temperatures are high, flows are low, and the water quality and fish passage are both degraded (City of Reno, 2006). In an effort to improve water quality and aquatic and riparian habitat below the Derby Dam on the Truckee River, the Cities of Reno and Sparks have been granted Reclamation Desert Terminal Lakes funding. In concept, Reclamation and the Cities propose to plant

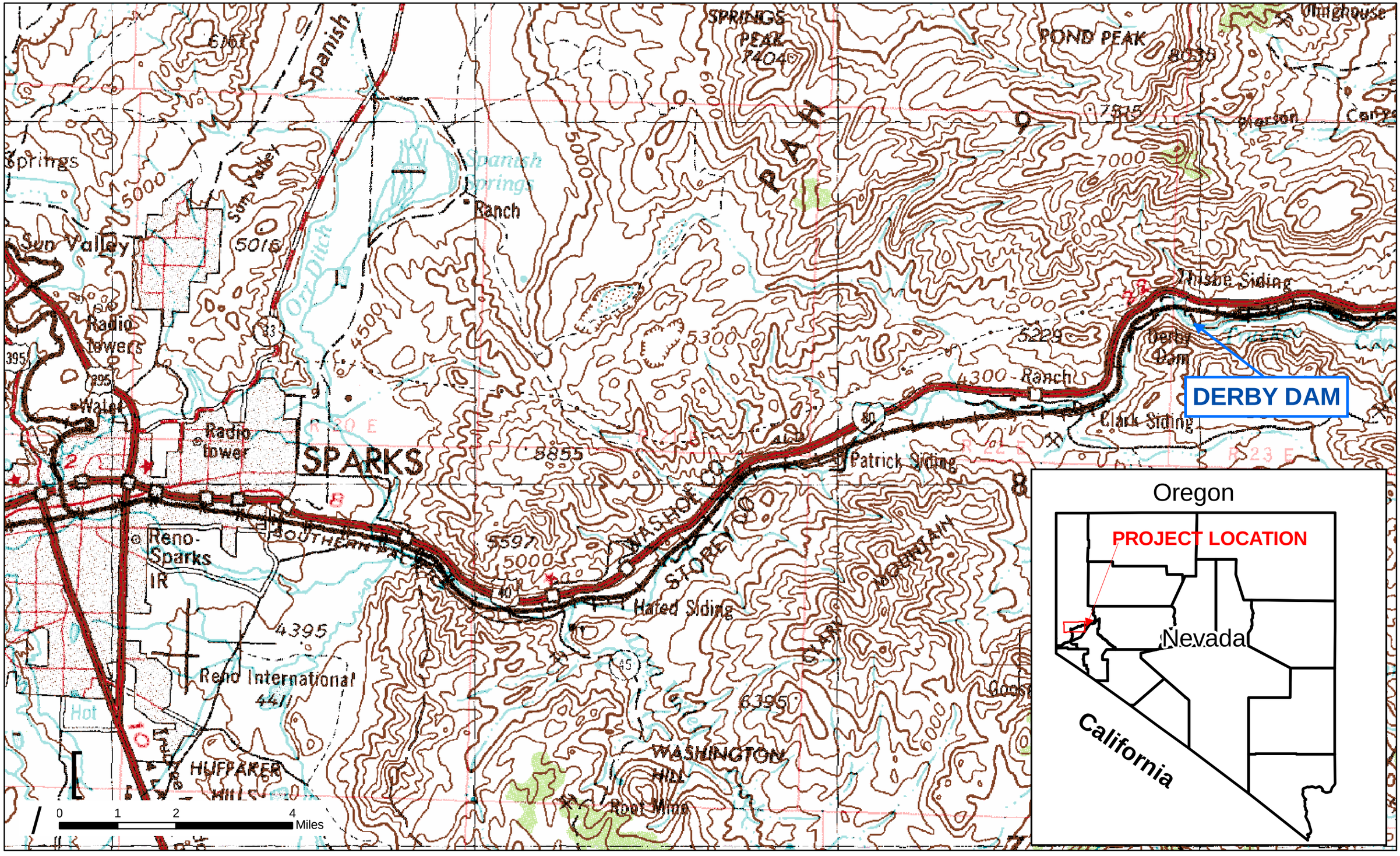
native riparian vegetation for bank stabilization and to shade the river, especially the south bank. These improvements are designed to shade the channel, lowering water temperature during summer low flow periods. Exhibit 2 provides a site location map of the proposed action. Exhibit 8, showing a Design for the Proposed Action, provides a view of the aerial extent of the proposed project.

1.2 Proposed Action

The Cities of Reno and Sparks, under a Reclamation grant, are proposing revegetation using native plants adjacent to the Truckee River below Derby Dam. The goal of this action is "to create a more healthy and natural riparian ecosystem along the reach of the lower Truckee River just below Derby Dam." The Proposed Action involves the enhancement of native riparian vegetation and riparian functions in areas below the dam with the specific goal of improving water chemistry and quality along the 0.7-mile reach of the river. A secondary goal of this action will be to improve the conditions for threatened and endangered and other resident and migratory fish species in the river. Revegetation will occur by planting riparian woody plant species along selective portions of the south and north river banks, native vegetation along the fish bypass channel, hydro-seeding, and placement of willow wattles The City of Reno will provide one acre-foot of water annually to assist with the establishment of the native revegetation areas, which is anticipated to be approximately 3 years. The Proposed Action also includes providing water to Pyramid Lake via the permanent transfer of 250 acre-feet of water annually to the lower Truckee River and Pyramid Lake; this 250 acre-feet is also part of upstream restoration projects funded by Reclamation under the Desert Terminal Lakes Program.

Exhibit 1: Native Fish Ranges and Structural Barriers to Passage





Site Location Map

EXHIBIT 2

1.3 Purpose of the Proposed Action

Stream and riparian restoration projects are intended to improve or restore environmental conditions in the stream and the adjacent stream corridor. The goals of the proposed action are to improve quality by:

- Increasing shaded riverine habitat
- Reducing thermal gain and providing a more favorable temperature during low flow conditions
- Increasing levels of dissolved oxygen
- Increase diversity and quality of riparian habitat through planting of native vegetation
- Reducing sediment loads generated as a result of unstable bank conditions
- Provide water to Pyramid Lake via the permanent transfer of 250 acre-feet of water annually to the lower Truckee River and Pyramid Lake.

A secondary goal is to enhance the aquatic and riparian habitat through the 0.7-mile reach of the Truckee River below Derby Dam.

1.4 Need for the Proposed Action

The October 2003 "Assessment of Riverine Restoration Potential," authored by the U.S. Army Corps of Engineers (USACE), Sacramento District, concluded that the lower Truckee River is no longer a stable river system (USACE, 2003). It states:

> River damming, diminished flows, riparian forest destruction, and channel alterations all have contributed to channel instability throughout the study area (Truckee River from Vista to Pyramid Lake, Nevada). The banks in some areas have been stabilized with rock to protect the land from erosion. The Truckee River suffers in some reaches from considerable erosion that undercuts streamside habitat and results in barren stream banks with no habitat value.

Between Vista and Wadsworth, Nevada, significant quantities of sediment have historically been delivered to the river by tributary alluvial fans. Due to the construction of Truckee Canal and Interstate 80 through the lower Truckee River canyon, sediment delivery to this reach of the river has been significantly reduced. This lack of balance in the erosion/deposition characteristics normally seen in a healthy river system prevents the Truckee River from recovering on its own.

In some locations along the river, the channel has become incised, stranding cottonwood riparian forests on terraces. Cottonwoods that depend on a wet substrate for seed germination and development are now isolated from all but the extreme flood flows. Eventually, these isolated forests will die without regenerating new growth (USACE, 2003).

The Truckee Meadows Flood Control General Reevaluation Study, an extensive assessment of potential restoration opportunities for the Lower Truckee River, was also performed by the USACE and their consultant to evaluate different Truckee River reaches (63 FR 30481). The assessment concluded that there was a tremendous loss of riparian vegetation of ***up to 85 percent over the last 60 years***, and that any effective ecosystem restoration plan should work to re-establish the complex riparian forest (RLCH, 2007).

1.5 Past and ongoing Projects and Plans

To understand the viability and potential success of the design for this project, it is important to understand past projects, projects being considered by others, the current management plans developed for the lower Truckee River, and how the proposed project fits into the overall management of resources.

In the late 1800s, the riparian habitat along the Truckee River was logged to provide lumber for development and mining operations that removed the vegetation that protected riverbanks from erosion. After the mining ended and the forest began to return along the rivers, the growth of agriculture and ranching around the Reno-Sparks area further degraded habitat quality (TNC, 2005) through removal of the riparian forest to make room for pastures and fields. Bank erosion degraded the water quality in the Truckee River as a result of agricultural and ranching activities.

The growth of Reno and Sparks created a need to protect the cities from flooding along the Truckee River and its tributaries. The USACE provided flood protection for the growing metropolitan area beginning in the early 1950s under the Truckee River and Tributaries Project. Under authorization provided by the Flood Control Act of 1954 (PL 780, September 3, 1954, 83rd Congress, Second Session), the USACE conducted interim channel improvements for flood control in California and Nevada. By 1961, the State of Nevada Department of Natural Resources accepted the operation and maintenance required for channel improvements at various locations between Reno and Wadsworth.

Since that time, numerous channelization and rehabilitation projects were undertaken. The majority of these projects either worked to control seasonal flooding or to stabilize river banks and riparian zones. Exhibit 3 provides a geographic presentation of the past and ongoing river rehabilitation projects.

Between March 21, 1968 and May 25, 1968, channel improvement work occurred at additional sites in the area around Patrick, Nevada. The intermittent channel and bank protection created canals and placed rock revetment and rock gabions to stabilize eroding banks (TNC, 2005). In many instances, the bank protection work failed over time with degradation and washing away of rock gabions. The revetments and channelization projects did not stabilize the riverbanks over the long term because these projects were not regularly maintained over the past 40 years. This resulted in an accelerated rate of bank erosion that continues in this area.

A major river rehabilitation project that was completed in recent years is the McCarran Ranch Pilot Project Restoration (approximately 10 miles upstream from Derby Dam) (TNC, 2005). The McCarran Ranch project design called for a substantially narrower channel and included rebuilding river meanders, two riffle/pool sequences, excavating several seasonal wetland areas, creating five rearing ponds for leopard frogs, and revegetation of 15 acres of riparian habitat. The project's design also included the construction of a riffle/pool/run sequence to raise the channel bed and provide hydraulic diversity of aquatic habitat for fish, construction of a cobble berm on the opposite bank to create a backwater area for fish and wildlife, protect the existing riparian vegetation from erosion, and reduce the channel width and depth.

The McCarran Ranch pilot project was completed in November, 2003 and was successful in providing benefits to the aquatic system by reducing the channel width in one area from about 200 feet wide to 120 feet wide. In addition, TNC noted that fish species benefited shortly after the effort since they immediately re-occupied the disturbed sites (TNC, 2005; RLCH, 2007). Consistent with the overall plan for stream rehabilitation, TNC initiated a project in 2005 for the McCarran Ranch, Section 1135, to correct problems associated with the bank protection work completed by USACE in 1968. The Section 1135 project included aquatic feature restoration and vegetative restoration in degraded upstream and downstream areas.

Just west of McCarran Ranch, the U.S. Bureau of Land Management (BLM) also acquired 2.5 miles of riverfront property on the 340-acre Mustang Ranch. Efforts for channel and riparian forest restoration by the Cities, TNC, Reclamation, BLM and Washoe County along the Truckee River are also designed to stabilize the riparian environment so that high levels of nitrogen and phosphorous from wastewater effluent are naturally absorbed and filtered by the river ecosystem. The goal is to allow greater discharge rates needed to accommodate the area's growing population. Shade from plantings of new trees along the river also helps prevent unhealthy algae blooms and low oxygen levels by keeping the water cooler (TNC, 2005).

1.6 Relevant Statutes, Regulations, and Other Plans

The proposed action is required to conform to the provisions of all applicable local, state, and federal regulations and ordinances. The specific authorization for the funding for this project is summarized in excerpts from the following two public laws:

Public Law 107-171: Farm Security and Rural Investment Act of 2002
(Farm Bill)
Enacted on May 13, 2002

SEC. 2507. DESERT TERMINAL LAKES.

(a) IN GENERAL.— Subject to subsection (b), as soon as practicable after the date of enactment of this Act, the Secretary of Agriculture shall transfer $200,000,000 of the funds of the Commodity Credit Corporation to the Bureau of Reclamation Water and Related Resources Account, which funds shall —

(1) be used by the Secretary of the Interior, acting through the Commissioner of Reclamation, ***to provide water to at-risk natural desert terminal lakes****; and*

(2) remain available until expended.

Public Law 108-7, Omnibus Appropriations Bill
Enacted on February 20, 2003

Bureau of Reclamation

The following appropriations shall be expended to execute authorized functions of the Bureau of Reclamation:

SEC. 207. RESTORATION OF FISH, WILDLIFE, AND ASSOCIATED HABITATS IN WATERSHEDS OF CERTAIN LAKES.

(a) IN GENERAL- In carrying out section 2507 of Public Law 107-171, the Secretary of the Interior, acting through the Commissioner of Reclamation, shall —

(1) subject to paragraph (3), provide water and assistance under that section ***only for the Pyramid, Summit, and Walker Lakes in the State of Nevada****;*

In addition to these two public laws, compliance with other federal laws is required for this proposed action. This EA provides an analysis of the proposed action with respect to relevant federal and state laws in Exhibit 4.

1.7 Current Reservoir and River Operations in the Truckee River Basin

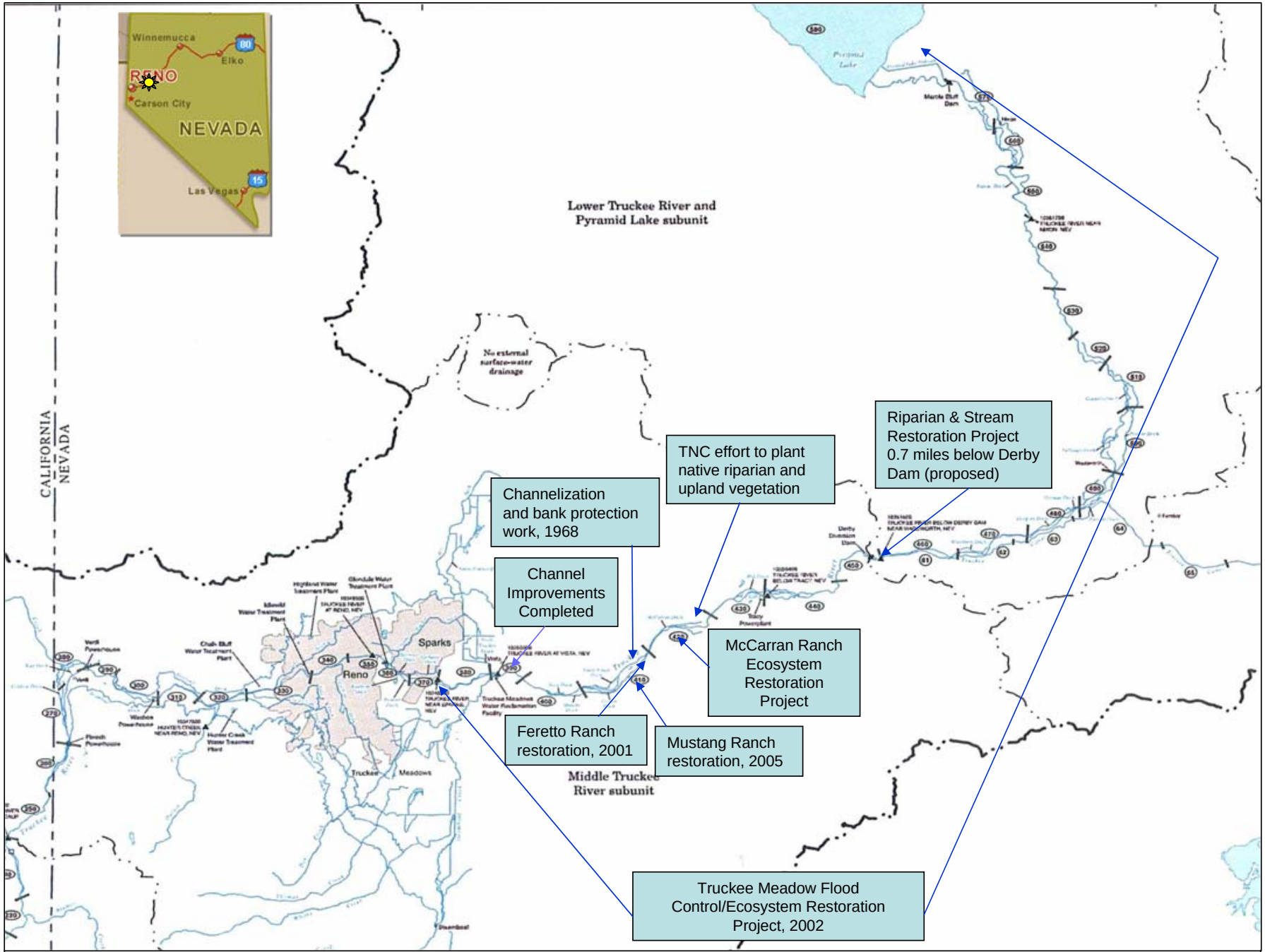
The Truckee River is a highly regulated river system. Dams at the outlet of Lake Tahoe and on several major tributaries in the Truckee River basin create reservoirs that, together, can store about a million acre-feet of water. A number of court decrees, agreements, and regulations govern day-to-day operations of these reservoirs, administered by the Federal Water Master for the Orr Ditch Court. The reservoirs are operated to capture runoff as available when flow in the river is greater than needed to serve downstream water rights in Nevada and to maintain prescribed stream flows, known as Floriston Rates, in the Truckee River measured at the Farad gauge near the California-Nevada State line (Taylor, 1997).

Floriston Rates provide water to serve hydro-electric power generation, municipal and industrial use in Truckee Meadows[1], stream flow, and agricultural water rights. In general, reservoir releases are made as necessary to meet dam safety or flood control requirements and to serve water rights when unregulated flow is insufficient to serve those rights (73 *Federal Register* 4614).

Each reservoir currently has authorization to serve specific uses. For example, Prosser Creek and Stampede Reservoirs store and release project water at specific times to benefit the Lahontan cutthroat trout (LCT) (*Oncorhynchus clarki henshawi)* and cui-ui (*Chasmistes cujus)* of the lower Truckee River and Pyramid Lake. Project water in Prosser Creek Reservoir is also exchanged with Floriston Rate Water in Lake Tahoe to maintain prescribed minimum flows in the Truckee River immediately downstream from Lake Tahoe Dam.

The improvements proposed below Derby Dam would not modify the Floriston Rates. The only modifications anticipated will be in long-term improvements to water quality within the existing channel.

[1] The **Truckee Meadows** is the valley in Northern Nevada that contains the cities of Reno and Sparks. The valley is approximately 10 miles square. It is bounded by the Carson Range in the west and the Virginia Range in the east. To the south is Washoe Valley and to the north is a series of smaller valleys collectively known as the "North Valleys." The Truckee Meadows is named for the Truckee River, which crosses the valley from west to east.



0 2 4 8 miles

Approximate Scale: 1-in. = 4 miles (22,100 feet)

U.S. Department of the Interior, Bureau of Reclamation	**Exhibit 3** **Past & Ongoing River Rehabilitation Projects**	**Truckee River Below Derby Dam** **Low Flow Channel Development**	Source: USGS, 2001 - 1:150,000 Hydrologic Features; Lakes, Reservoir, River, and Canal Model Reaches; and Selected Data-Collection Sites of Truckee River, Truckee Canal, Carson River, and Lahontan Reservoir, California and Nevada.

Exhibit 4: Relevant Statutes, Regulations and Other Plans

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
National Environmental Policy Act Pub. L. 91-90, 42 U.S.C. 4321-4335 40 CFR Part 1500 23 CFR 771	Council for Environmental Quality (CEQ)	This Act establishes a national policy for the protection and enhancement of the environment. The Act directs federal agencies to use a systematic interdisciplinary approach, which ensures the integrated use of natural and social sciences and the design arts, in planning and decision, making affecting the human environment. The Act also establishes the Council for Environmental Quality. A federal agency prepares a written environmental assessment (EA) to determine whether or not a federal undertaking would significantly affect the environment.	The EA is written to concisely describe the underlying purpose and need for the proposed action, the alternatives including the proposed action, and the purpose and need [40 CFR §1502.13].
Departmental Manual, Part 516, 516 DM 1-7	Department of the Interior (DOI)	This manual guidance sets forth policies and procedures to be followed by all agencies and organizational units within the Department of the Interior for complying with NEPA. The Reclamation's NEPA responsibilities, guidance to applicants, major actions normally requiring an EIS, and categorical exclusions are identified in 516 DM 6, Appendix 5.	This manual specifies how NEPA documents should be organized and written.

Exhibit 4. Continued

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
Endangered Species Act, as amended 16 U. S. C. 1531 et seq.	US Fish and Wildlife Service (USFWS), National Oceanic & Atmospheric Administration (NOAA)	The Act provides broad protection for species of fish, wildlife and plants that are listed as threatened or endangered in the U.S. or elsewhere. The Act outlines procedures, for federal agencies to follow when taking actions that may affect listed species.	Proposed Action is designed to positively affect riparian habitat for Lahontan cutthroat trout (a threatened species) and the cui-ui (an endangered species) below Derby Dam.
National Historic Preservation Act and implementing regulations 16 U.S.C. 470 et seq. 36 Code of Federal Regulations 800	Advisory Council on Historic Preservation (ACHP)	The National Historic Preservation Act (NHPA) created the ACHP to advise the President and Congress on matters involving historic preservation.	The regulations define how federal agencies meet Section 106 statutory responsibilities. This process seeks to accommodate historic preservation concerns with the needs of federal undertakings through consultation among the agency officials and other parties with an interest in the effects of the undertaking on historic properties, beginning at the early stages of project planning; including the identification of culturally sensitive sites.
Antiquities Act of 1906		Gives the authority to restrict the use of particular public land owned by the federal government by executive order, bypassing Congressional oversight.	The Antiquities Act resulted from concerns about protecting mostly prehistoric Indian ruins and artifacts — collectively termed “antiquities” — on federal lands in the West. Removal of artifacts from these lands by private collectors. Cultural surveys have been completed to identify presence of antiquities in the project area and none were found.
Archeological Resources Protection Act, as amended		The purpose of this Act is to secure the protection of archaeological resources and sites which are on public lands and Indian lands, and to foster increased cooperation and exchange of information	Cultural surveys have been completed to identify presence of antiquities in the project area and none were found.

Exhibit 4. Continued

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
The Clean Air Act (Pub. L. 91-604, 42 U.S.C. 7609, 1970).	US EPA	This Act authorizes EPA to review and comment on the environmental impact of matters relating to EPA's duties and responsibilities in any proposed legislation, proposed federal construction projects or any other major federal agency actions and proposed regulations published by any federal agency.	CAA requires that the proposed action be reviewed for potential effects on air quality. Comments are made public and findings are published and referred to the CEQ.
Clean Water Act (CWA) 33 U.S.C. 1251 et seq.	US EPA/ US ACE	This Act authorizes EPA to review and comment on the environmental impacts of the proposed action to waters of the U.S., including the degradation of water quality, the discharge of dredged or fill material, wetland and riparian restoration, watershed protection, and construction impacts to water quality. A Federal Clean Water Act Section 401 water quality certification and a Section 404 permit will be required for the proposed action if it is determined that "effects occur to waters of the United States."	The Truckee River, including any adjacent jurisdictional wetland/riparian areas fall into this definition for "waters of the United States." The proposed action must comply with CWA implementing areas for maintaining water quality. Activities that can affect water quality include placement of fill materials, storm water management, and watershed protection and rehabilitation measures.
Interagency Consultation to Avoid or Mitigate Adverse Effects on Rivers in the Nationwide Inventory (Memorandum for Heads of Agencies; August 10, 1980).	DOI	This memorandum provides procedures and guidance for interagency consultation to avoid or mitigate adverse effects on rivers in the nationwide inventory.	The proposed action is designed to improve riparian habitat and therefore must be reviewed within the context of this memorandum.

Exhibit 4. Continued

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
Protection of Wetlands Executive Order (EO) 11990	DOI	EO requiring each agency to take action to minimize destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands. Requires avoidance of new construction located in wetlands unless agency finds there is no practicable alternative.	The proposed action is designed to improve riparian habitat including wetland areas and therefore must be reviewed within the context of this memorandum. Construction is designed to enhance and expand wetland areas through the project area.
Migratory Bird Treaty Act (MBTA) 16 U.S.C. 703-711	DOI / USFWS	This Act implements the United States' commitment to four international conventions for the protection of a shared migratory bird resource. Each of the conventions protects selected species of birds that are common to both countries (i.e., they occur in both countries at some point during their annual life cycle). Neo-tropical migrants (NTM) or Neo-tropical migratory birds. All Neo-tropical migrants and all songbirds that are listed as species of concern in this document are covered under the MBTA	The proposed action must be implemented in such a way as to avoid effects to bird species protected by the MBTA. Potential for effects is primarily during the breeding season (spring and summer).

Exhibit 4. Continued

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
Floodplain Management Executive Order 11988	US ACE	Tasks agencies to reduce the risk of flood loss, to minimize the impact of floods on human safety health and welfare, and to restore and preserve the natural and beneficial values served by floodplains. Reclamation must determine whether the proposed action will occur in a floodplain and consider alternatives to avoid adverse effects and incompatible development in the floodplains.	The proposed action will occur in a floodplain, but it does not include construction of buildings or other structures that are incompatible with the function of the floodplain.
Farmland Protection Policy Act of 1981 7 U.S.C. 4201-4209	NRCS	Agencies are required to minimize impacts on prime farmland and maximize compatibility with state and local farmland programs and policies.	The proposed action will not take place on prime or unique farmlands or farmland of state or local significance. Currently no active farming takes place in or adjacent to the project areas.
Invasive Species Executive Order 13112	Reclamation	Establishes the National Invasive Species Council. The Executive Order requires that a Council of Departments dealing with invasive species be created. EO is designed to prevent the introduction of invasive species and provide for their control and to minimize the economic, ecological, and human health impacts that invasive species cause,	The proposed action will include an Invasive Species Control Plan to specifically address the control of tall whitetop within the project area. Control of invasive species will facilitate reintroduction of native riparian vegetation.

Exhibit 4. Continued

Laws and Implementing Regulations and Executive Orders	Agency	Summary	Relationship to Proposed Action
Environmental Justice Executive Order 12898	Reclamation/all Agencies	Requires each federal agency to make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations.	The environmental analysis of the proposed action must include an analysis of the minority populations and whether the proposed action will disproportionately affect minorities in the area.
American Indian Tribal Rights, Federal-Tribal Trust Responsibilities, and the Endangered Species Act Secretarial Order 3206	DOI	If a proposed action affects tribal trust resources, agencies are required to consult with, and seek the participation of, the affected Indian tribes to the maximum extent practicable. This shall include providing affected tribes adequate opportunities to participate in data collection, consensus seeking, and associated processes. To facilitate the government-to-government relationship, the departments may coordinate their discussions with a representative from an intertribal organization, if so designated by the affected tribe(s).	The Environmental Analysis includes an analysis of Indian Tribal Trust Agreements and the effect of the proposed action on these instruments. Representatives of the local Indian tribes have been consulted and comments addressed in the analysis.
Consultation and Coordination with Indian Tribal Governments, Executive Order 13175". November, 2000	US EPA and other Federal Agencies	EPA and other federal agencies are required to establish and follow various procedures for consulting with federally-recognized tribal governments when an agency plan has a substantial impact on Indian tribes.	US EPA actively seeks help from federally-recognized tribes in defining agency actions with tribal implications.

Exhibit 5: State of Nevada Environmental Authorities

Laws and Implementing Regulations	Agency	Summary	Relationship to Proposed Action
Temporary Work in Waterways Permit	Nevada Division of Environmental Protection	Required for equipment operating within the channel of the Truckee River.	Current Proposed Action does not call for work within the channel, therefore the permit may not be required
Section 401 Water Quality Certification	Nevada Division of Environmental Protection	Certifications under Section 401 of the CWA are issued by the monitoring branch to ensure federally permitted activities do not cause water quality impairment.	Current Proposed Action does not call for work within the channel, therefore the permit may not be required
Clean Water Act Total Maximum Daily Loads (TMDLs) – CWA Section 303(d)	Regional Water Quality Control Board	Truckee River TMDLs quantify pollutant sources and allocate allowable loads to contributing point and non-point sources so that the water quality standards are attained.	Current Proposed Action does not call for work within the channel, therefore the permit may not be required
Title 45, NRS 501.105 Wildlife	Nevada Board of Wildlife Commissioners	Adopt regulations necessary to the "preservation, protection, management, and restoration of wildlife and its habitat." It may classify designated species of wildlife as sensitive, threatened or endangered [501.110 (2)] and all species considered protected. Nevada does not have a separate or distinct threatened or endangered species act. Regulations regarding classification of wildlife and fish species are contained in NAC 503 and taking is specifically prohibited by NAC 503.090 which states there is "no open season on those species of wild animal, wild bird, fish, reptile or amphibian classified as protected."	Several species found in the region have been identified for protection.
Title 45, NRS 501.105 - Wildlife	Nevada Board of Wildlife Commissioners	The Commission shall establish policies and adopt regulations necessary to the preservation, protection, management and restoration of wildlife and its habitat.	Regulations governing the restoration of wildlife habitats must be considered in designing the revegetation plan for riparian areas.

Exhibit 5. Continued

Laws and Implementing Regulations	Agency	Summary	Relationship to Proposed Action
Storm Water General Permit	Nevada Division of Environmental Protection	Requires storm water be treated to the maximum extent practicable. Numeric treatment requirements specific to storm water have not been established at the state level, but water quality parameters may be established on a site-by-site basis when the risk of contamination is present. Nevada has delegated authority to localities to develop and implement storm water plans as well. Storm water is of particular concern around Lake Tahoe and the Truckee River, and local storm water treatment requirements are likely in these watersheds.	The NDEP requires all construction sites disturbing more than one acre, industrial sites, and Municipal Separate Storm Sewer Systems (MS4s) to obtain NPDES permit coverage. A construction Storm Water Pollution Prevention Plan must be completed and a Notice of Intent must be filed for the proposed action prior to the onset of any construction.
Letter of Permission from State of Nevada	Nevada Department of Wildlife	Letter of approval for the proposed action for impacts to endangered or threatened fish and wildlife.	The Proposed Action is not expected to affect any state listed endangered or threatened species.
Grading Permit Article 438, Washoe County Development Code [110.438.5]	Washoe County issuance	For construction projects within Washoe County, moving over 50 cubic yards of earth requires a grading permit prior to starting work. Movement of over 1,000 cubic yards of earth and/or disturbing an area more than 25,000 square feet in size (about 1/2 acre) could potentially require a special use permit in addition to a grading permit.	"Grading" includes clearing and grubbing, excavation, grading and earthwork construction, including placement of fills and embankments. The Proposed Action will fall within these requirements. Plans and specifications and supporting data consisting of a soil engineering report and engineering geology report must be submitted.

Exhibit 5. Continued

Laws and Implementing Regulations	Agency	Summary	Relationship to Proposed Action
Dust Control and Vector Control Permits	Washoe County Air Quality Management Division	Surface Area Disturbance: Whenever a surface area of 5 acres or more is disturbed, an air quality permit is required. Additionally, a permit is not required for agricultural activities on agricultural land; however dust control measures are still required. All surface area disturbances, even when less than 5 acres must also implement dust control measures. The Land Development Program (LDP) staff reviews community development applications with regard to sewage disposal, domestic water quality and supply, solid waste, vector control, food establishments, underground storage tanks, air quality management and environmental health regulations. The LDP staff coordinates the review and approval of community development and building permit applications with Environmental Health Services Division (EHSD) and Air Quality Management Division (AQMD) staff to ensure compliance with federal, state and local health regulations.	Proposed Action will exceed the 5-acre threshold therefore the permit likely will be required. Dust control measures will be implemented.
Special Use Permit	Storey County issuance	A Special Use Permit for revegetation of riparian areas along the south bank of the Project Area may be required prior to the onset of revegetation efforts.	This permit will be required.

Exhibit 5. Continued

Laws and Implementing Regulations	Agency	Summary	Relationship to Proposed Action
Channel and Flow Easement	Nevada Division of State Lands	Divisions within the Nevada Department of Conservation and Natural Resources have primary authority to administer laws and regulations pertaining to water use and allocation, water quality, and fish and wildlife populations in Nevada. The Nevada Division of Wildlife (NDOW) has assessed minimum in-stream flows to determine the potential impact to fish habitat from water development projects proposed for the Truckee River and Lamoille Creek. The agency also has taken advantage of opportunities to obtain water rights and formal and informal agreements for return flow water from irrigation systems, a power plant, and a municipal water treatment plant to maintain reservoir pool elevations and wetlands on state wildlife management areas (WMA).	Riparian ecosystem restoration designs must take into account the accepted water use and allocations for the lower Truckee River.

2 ALTERNATIVES

2.1 Introduction

This section describes the two alternatives analyzed in this Environmental Assessment: The No Action Alternative and the Proposed Action Alternative. An analysis of all alternatives considered but dismissed from further consideration is presented below, and the remainder of the section describes how the proposed action was chosen for stream bank improvements rehabilitation.

2.2 Description of Alternatives

2.2.1 No Action Alternative

Under this alternative, the proposed stream bank improvements and vegetative enhancement adjacent to the Truckee River below Derby Dam would not be implemented. Without such improvements, there would continue to be a diminished ability for the stream channel to be shaded and cooled as the planned habitat enhancement within the vicinity of Derby Dam would not occur.

2.2.2 Proposed Action Alternative

The proposed revegetation efforts should provide a more functional riparian habitat such as well vegetated, stable banks to shade the water column. The design for this portion of the project begins at the Derby Dam on the Truckee River approximately 20 miles east of Reno, Nevada, and extends 0.7 miles downstream. Specifically, riparian corridor revegetation is planned. Exhibit 8 outlines the design for the proposed action.

The proposed action alternative is a revegetation effort of approximately 3.12 acres along the banks of the river to provide increased woody riparian species to reduce thermal gain in the river during summer low flow conditions and provide habitat diversity. Portions of the project area along the banks and near the existing fish passage channel are to be seeded with native vegetation to provide weed control, habitat improvement and reclamation for disturbance due to the project. A small portion (250 linear feet) of the project will be excavated on the south side of the river to provide an improved foundation for planting. A small staging area (approximately 1 acre) and temporary roadway (approximately 350 feet) will be constructed to support this effort. The remainder of the project areas will be revegetated by hand or with minor equipment such as 4 wheelers and hand held water jets. Major elements of the project are described below and summarized in Exhibits 6 and 7.

Weed Control: The initial phase of the project is for the mitigation of noxious weeds in areas where revegetation will occur. This involves mowing areas of tall whitetop at minimum three times at peak flowering, starting in the spring and continuing until fall seeding. Aggressive treatment of tall whitetop by combining mechanical and herbicidal methods during fall and spring/summer should control the spread of this invasive weed and favor the planting of more desirable riparian species in a diverse, sustainable plant community.

Excavation: A 250 ft length of vertical stream bank at the downstream edge of the project will be excavated using a 1 yard excavator to grade the bank to a 3 to 1 horizontal to vertical slope. This will provide an adequate surface for revegetation. This material will be excavated and

Exhibit 6: Habitat types/Vegetation Communities To Be Created for Proposed Alternative

Habitat Type/Vegetation Community	Plantings	Acres Enhanced
Willow Wattle*	*Salix* ssp.	0.13
Native Re-vegetation	Mixed Great Basin Shrubs and Grasses (Exhibit 7)	1.02
Woods Rose, Buffalo Berry and Golden Currant	*Rosa woodsii.*; *Ribes aureum; Sphepherdia canadensis*	0.30
Cottonwood Pole Plantings	*Populus fremontii*	0.46
Hydroseeding	Mixed Great Basin Shrubs and Grasses (Exhibit 7)	0.82
Cottonwood Containers	*Populus fremontii*	0.36
Willow Pole Planting	*Salix* ssp.	0.12

*** Assumes a 3-foot wide area of treatment**

Exhibit 7: Shrub and grass mix for Native Revegetation and Hydroseeding

Botanical Name	Common Name
Achnatherum hymenoides	Indian ricegrass "Nezpar/Native"
Agropyron fragile ssp. sibericum	Siberian wheatgrass "P-27"
Artemisia tridentate ssp tridentata	Big sagebrush
Artemisia tridentate ssp wyomingensis	Basin sagebrush
Atriplex canescens	Four-wing saltbrush
Atriplex confertifolia	Shadscale saltbrush
Chrysothamnus nauseosus	Rabbitbrush
Cleome lutea	Bee plant
Elymus cinereus	Great Basin wildrye
Elymus elymoides	Bottlebrush squireltail
Hymenoclea salsola	Cheesebush
Grayia spinosa	Spiny hopsage
Leymus triticoides	Creeping wildrye
Lolium multiflorum	Annual ryegrass
Lupinus argenteus	Silver lupine
Penstemon palmeri	Palmer penstemon
Sphaeralcea ambigua	Globemallow
Tetradymia spinescens	Spiny horsebrush

hauled to a landfill for disposal. The approximate volume of material to be excavated and hauled will be 650 cubic yards.

Temporary Staging Areas and Roadway: There will be minimal construction of staging areas and temporary roadways. The 250 ft of bank excavation at the downstream section of the project will require an approximately 1 acre staging area and a 350 ft construction roadway. This disturbed area will be hydroseeded with a native seed mix after project completion.

Seeding: Much of the project area will be reseeded for habitat enhancement, disturbance reclamation and weed control. Native shrub and grass species will be broadcast using both traditional mechanical

methods and hydroseeding. Approximately 2.9 acres is anticipated to be reseeded. An area of approximately 1 acre will be disked and planted with seed. Approximately 1.9 acres will be hydroseeded with only tall whitetop control needed for site preparation.

Containerized Plants: Approximately 345 containerized plants will be planted by hand throughout the project area. These will consist of cottonwood for shade and Woods rose, golden currant and buffaloberry for habitat diversity. Slow release water and fertilizer will be integrated into the plantings to ensure survival.

Pole Plantings: In order to provide increased shaded habitat, approximately 150 cottonwood and 40 willow poles will be planted along the banks of the Truckee River in the project area. These poles will be 6 to 8 ft in length and will be planted using a hand operated "stinger" water jet down to the groundwater table.

Willow Wattles: In order to enhance low flow shading approximately 1950 linear feet of willow wattles will be installed at the ordinary low water elevation. These will consist of bundles of willow branches ranging from 6 to 12 inches in diameter and 6 to 30 feet long. Trenches for willow bundles will be hand dug and wattles will be staked using both 18 inch willow stakes and wood construction stakes. These features are designed to be primarily for habitat enhancement and not bank stabilization. Approximately 0.13 acres will be planted.

Irrigation: It is anticipated that only the 1 acre native revegation area will be irrigated. The 1 acre site will be irrigated for 3 years to ensure establishment. This will be done through a temporary irrigation system designed by the revegetation contractor. One acre-foot annually of Truckee River water is available from the City of Reno.

Herbivory Control: Seeded and hydroseeded areas will be properly mulched to discourage herbivory. It is not anticipated that pole plantings will be targeted by herbivores on the project site. For containerized plants, two inch chicken wire baskets will be installed over each plant to prevent herbivory, and slow-release fertilizers include terpene-producing compounds that discourage herbivory.

2.2.3 Alternative Effect Table

A comparison of structural and operational aspects by alternative of the proposed project, as implemented through the proposed action and the No Action Alternative, is presented as Exhibit 9.

2.3 Alternatives Considered but Eliminated from Further Study

In 2006, two alternatives were discussed for the initial project, "The Truckee River below Derby Dam Low Flow Channel Development Project." These alternatives were analyzed for feasibility, cost, and benefit to the aquatic species of concern. The first alternative considered, but eliminated from further study, included excavation of a new low flow channel within the existing active channel. This alternative was eliminated because the active stream channel currently exhibits an excellent armoring layer. The excavation of a new low flow channel, and subsequent disturbance of the existing armoring layer, would disturb channel stability, induce further vertical instability, and adversely affect the stream environment (Blum, personal communications, 2007).

A second alternative, outlined in the *Draft Conceptual Design Report: Truckee River Below Derby Dam Low Flow Channel Development, June 2, 2006 (*City of Reno, 2006) proposed a design that partially fills the existing channel. Channel fill material would also be stabilized with larger diameter rock dikes oriented at 30 degree upstream angles from the bank. Filling of the channel would result in slight increases in water surfaces for lower flows. This design also proposed enhancement of riparian

vegetation along selective portions of the stream bank by utilizing pole planting and containerized plants to add cottonwood, willow, and palustrine emergent vegetation to existing banks and point bars.

In 2008, a third alternative was developed that included a modified version of the alternative described above. Small areas of gravel and cobble fill were to be imported to enhance existing gravel bars to provide additional structure in the river. This alternative was abandoned when it was determined that a similar effect on water quality could be accomplished through a less invasive approach of shading the channel. It is believed that this approach would impart less direct adverse effects on the river channel, while accomplishing similar goals for water quality and riparian ecosystem enhancement.

Proposed Action Design Map

EXHIBIT 8

Exhibit 9: Comparison of Effects by Alternative

Project Element	Type of Effect Direct	Proposed Action	No Action
Invasive Species	Direct	Aggressive treatment of tall whitetop by combining mechanical and herbicidal methods during fall and spring/summer should control the spread of this invasive weed and favor the planting of more desirable riparian species in a diverse, sustainable plant community. **Positive Effect**	Tall whitetop, a.k.a. Perennial pepperweed, occurs in large stands on the perimeter of the project. It will continue to invade and compete with more desirable riparian species along the Truckee River, especially at newly exposed or created surfaces.
Aquatic Habitat	Direct	Long-term positive effects from this alternative, which would enhance and create three different types of habitats consisting of five different plant communities. The habitat types that would be constructed are Cottonwood, Willow, and Woods rose and golden currant. **Positive Effect**	No modifications of the aquatic habitat. Shaded riverine aquatic habitats in the form of overhanging and live vegetation and dead woody material protruding into the stream and woody debris has been lost or diminished. Potential for wide fluctuations in water temperature because unshaded banks remain.
Wildlife	Direct	Temporary habitat effects during revegetation. Any wildlife near the project area would be disturbed by revegetation activities, and may likely leave the area during construction. Long-term positive effects as wildlife would be expected to return to the project area after the project is completed. In addition, the restored and more diverse habitat would encourage more wildlife to migrate into the area. The number of reptiles and amphibians and other water-dependent species would also be expected to increase as they colonize the revegetated stream banks. **Positive Effects**	Wildlife resources would continue to decline. There would be no efforts to revegetate the areas below Derby Dam or provide a diverse vegetative community that would attract wildlife. Invasive species would most likely continue to invade and compete with more desirable riparian species that attract wildlife.

Exhibit 9. Continued.

Project Element	Type of Effect Direct	Proposed Action	No Action
Fish Habitat	Direct	Water column would be shaded along the south bank, increasing the potential for greater aquatic habitat and a more protected fish migration route. Shading and revegetation efforts should provide the river channel with lower water temperatures and higher dissolved oxygen during low flow conditions: **Positive effect**	No modifications of riparian habitat. No modification of critical habitats to shade the water column.
Threatened and Endangered Species	Cumulative	Stable, well-vegetated banks should provide improved aquatic habitat in the long term as the vegetation matures over time. **Positive Effect**	No improvement to the habitat of the LCT and Cui-ui in areas below Derby Dam.
Water Quality	Direct	The vegetation improvements are being designed to shade the channel, lowering water temperature during summer low flow periods. These improvements should minimize the seasonal fluctuation of water temperature, increase water quality parameters desirable to aquatic species (such as dissolved oxygen and temperature), and decrease nutrient loading in the water. **Positive Effect**	Water quality in the river would continue to experience wide fluctuations of seasonal temperature change and a general degradation of chemical and biological parameters making it unsuitable for threatened and endangered fish species.
Wetlands/ Riparian Habitats	Direct	Short-term disruption of riparian habitats during implementation of the project. The new riparian habitat should provide shaded riverine aquatic habitat and lower the water temperatures. **Positive Effect.**	No Effect
Cultural Resources	Indirect	Activities would have no effect on the resource. Establishing vegetation in the riparian habitat could minimize soil erosion, minimizing potential impacts to the Derby Dam and the associated resources. **Positive Effect.**	No Effect.

Exhibit 9. Continued.

Project Element	Type of Effect Direct	Proposed Action	No Action
Indian Trust Assets	Indirect	The proposed action is located west of Pyramid Lake Indian Reservation lands and in areas of importance to the Reno Sparks Indian Colony and the Washoe Tribe. No known Indian Trust Asset negative issues are associated with the proposed action. The project is designed to ultimately benefit threatened and endangered fish species of both Pyramid Lake and the lower Truckee River, especially during spawning runs, and is anticipated to have a beneficial impact for this Indian Trust Asset. **Positive Impacts.**	No Effect.
Socio-Economics	Indirect	Minor short-term improvement during revegetation activities from labor employment. **No negative long-term effects** on social structure anticipated.	No Effect on existing population, housing, and community infrastructure.
Recreation	Direct	Short-term negative effects are minimized because of restricted access to the river. Long term positive enhancement of riparian areas, wildlife and fish habitats. **Positive Effect.**	No Effect
Soils	Direct	Long term positive effects to reduce sediment losses by revegetation of stream banks.	No Effect
Air Quality	Direct	**No long-term effects** anticipated.	No Effect
Environmental Justice	Indirect	Proposed Action would have no known environmental justice impacts and would not disrupt or displace any residential communities or commercial activities of any minority communities. The proposed site is federal land located remotely from residential areas. No adverse environmental condition will be introduced into the area as a result of the proposed action.	No Effect

3 AFFECTED ENVIRONMENT

3.1 Introduction

This section describes the current condition of resources in the study area that may be affected by the Proposed Action. Discussions of resources and related topics include:

- Water Resources
- Water quality
- Vegetation communities, including wetlands
- Noxious weeds
- Wildlife resources, including migratory birds, mammals, and fish species
- Threatened and endangered species, species of concern and special status species
- Cultural resources
- Indian Trust Assets
- Socio-economic resources, including a study of population
- Environmental justice
- Land use
- Land ownership
- Recreation
- Air quality
- Geology, including soils, groundwater resources, and fluvial geomorphic features
- Hazardous materials management

Resources related to aesthetics, prime farmlands, hydrology and hydraulics, and were omitted from this discussion because these resources are either not present or are resources that are unaffected by the proposed action.

3.2 Water Resources

The historic hydrology of the study area is characterized by periods of droughts and flooding. Drought is a long period of abnormally dry weather affecting a relatively large area. The two most severe droughts on record occurred from 1928 through 1935 and from 1987 through 1994.

Major flooding events occurred in 1907, 1909, 1928, 1937, 1950, 1955, 1963, 1983, and in January 1997. The “high water year” in the Truckee River basin is 1983, when Truckee River annual discharge recorded at the Farad gauge was 1,769,000 acre-feet (Taylor, 1997).

Major hydrologic features of the Truckee River Basin include Lake Tahoe and the Lake Tahoe Basin, the 105-mile long Truckee River, a number of lesser upstream storage lakes and reservoirs, various tributaries, and the Truckee River's terminus, Pyramid Lake. The Truckee River system (omitting Lake Tahoe and its major tributary, the 15-mile long Upper Truckee River) may be thought of as consisting of five (5) major river reaches including: (1) the 15-mile reach between the Truckee River's origin beginning at the Lake Tahoe Dam at Tahoe City, California; (2) the 20-mile reach flowing through the upper Truckee River canyon between Truckee, California, and Verdi, Nevada, a reach which cuts through the Carson Range of the Sierra Nevada Mountains; (3) the 15-mile reach through the Truckee

Meadows and the cities of Reno and Sparks, Nevada, to Vista; (4) the 30-mile reach from Vista to Wadsworth through the lower Truckee River canyon, and cutting through the Virginia Mountain Range; and (5) the 25-mile reach below Wadsworth, Nevada, traversing a broad alluvial valley to Pyramid Lake (Reclamation, 2008). A figure showing all of the Reaches of the Truckee River is provided as Exhibit 10.

Currently, significant water-related issues within the Truckee River Basin are: (1) diversions out of the basin at Derby Dam for use on Newlands Project farmlands in the Carson River Basin; (2) highly erratic periods of precipitation and river flows combined with limited upstream storage to accommodate extreme periods of drought (e.g., 1987-1994); (3) obtaining significant flows for the restoration and preservation of the Pyramid Lake fishery; (4) increasing water needs for the Reno-Sparks metropolitan area; (5) water quality problems in the lower Truckee River below the Truckee Meadows Water Reclamation Facility; and (6) the allocation of unused (unappropriated) Truckee River flood waters between the demands of the Truckee-Carson Irrigation District (TCID), operating on behalf of the Newlands Project farmers, and the demand for these waters by the Pyramid Lake Indian Tribe to restore the Pyramid Lake and lower Truckee River fisheries (Taylor, 1997).

The major source of water to the Truckee River is spring snowmelt from the Sierra Nevada Range. Multiple dams, the last of which was completed by 1972, alter the natural annual hydrograph. The Derby Dam Gauging Station (#10351600), maintained by the United States Geological Survey (USGS), and located approximately 2000 feet downstream of the Derby Dam, has consistent records of flow from the year 1919. Mean daily flow data from this gauge is available on the USGS website (USGS, 2008). Flows for this site (1974-Present) range from 1 to 19,700 cfs, with an average of 548 cfs. The watershed area is 1,676 square miles. Exhibit 11 shows the location of the regular stream flow monitoring stations for the Truckee River Watershed.

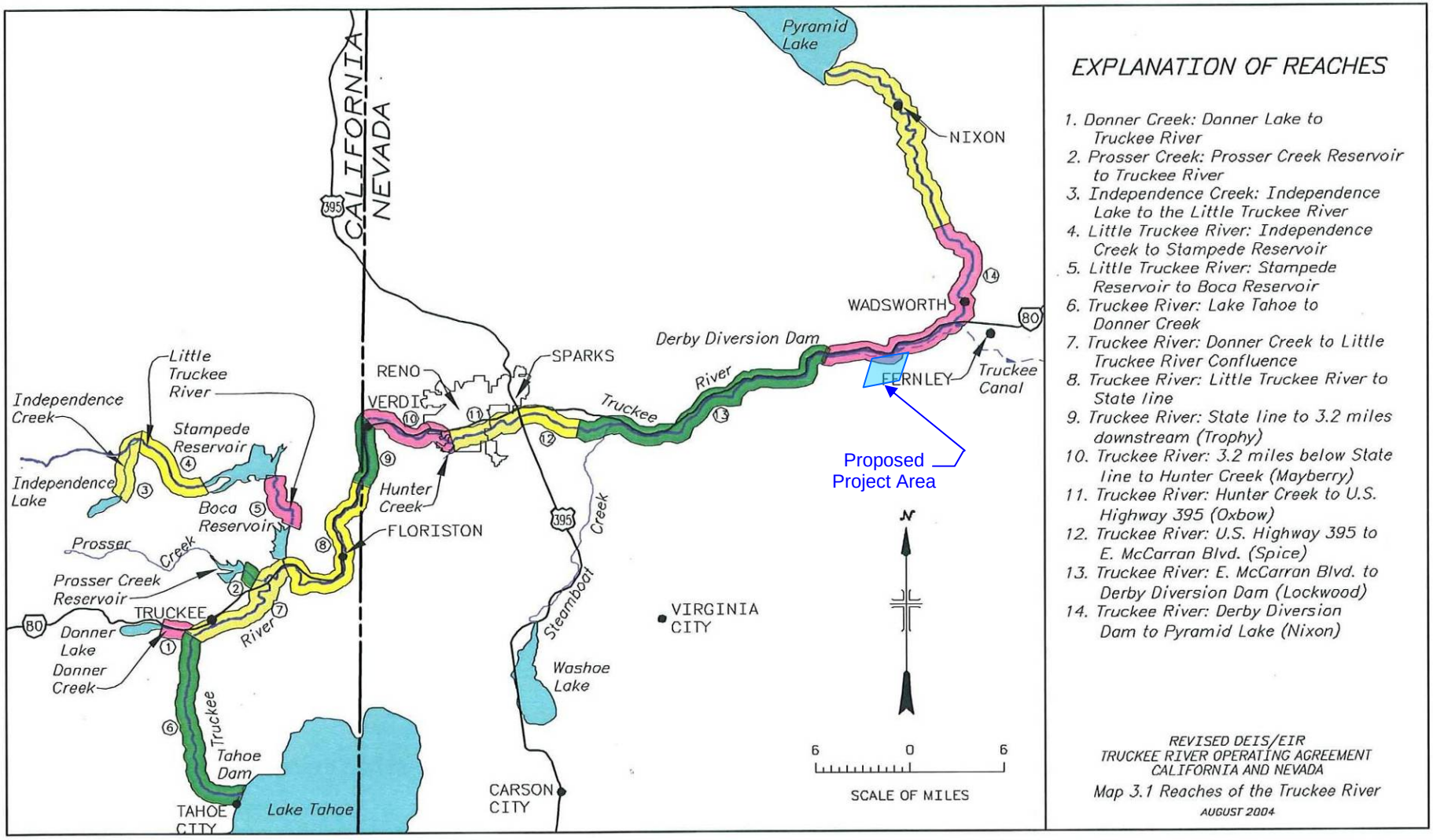


Exhibit 10: Reaches of the Truckee River.

(Figure borrowed from the Revised DEIS/EIR for the Truckee River Operating Agreement, California and Nevada, August 2004)

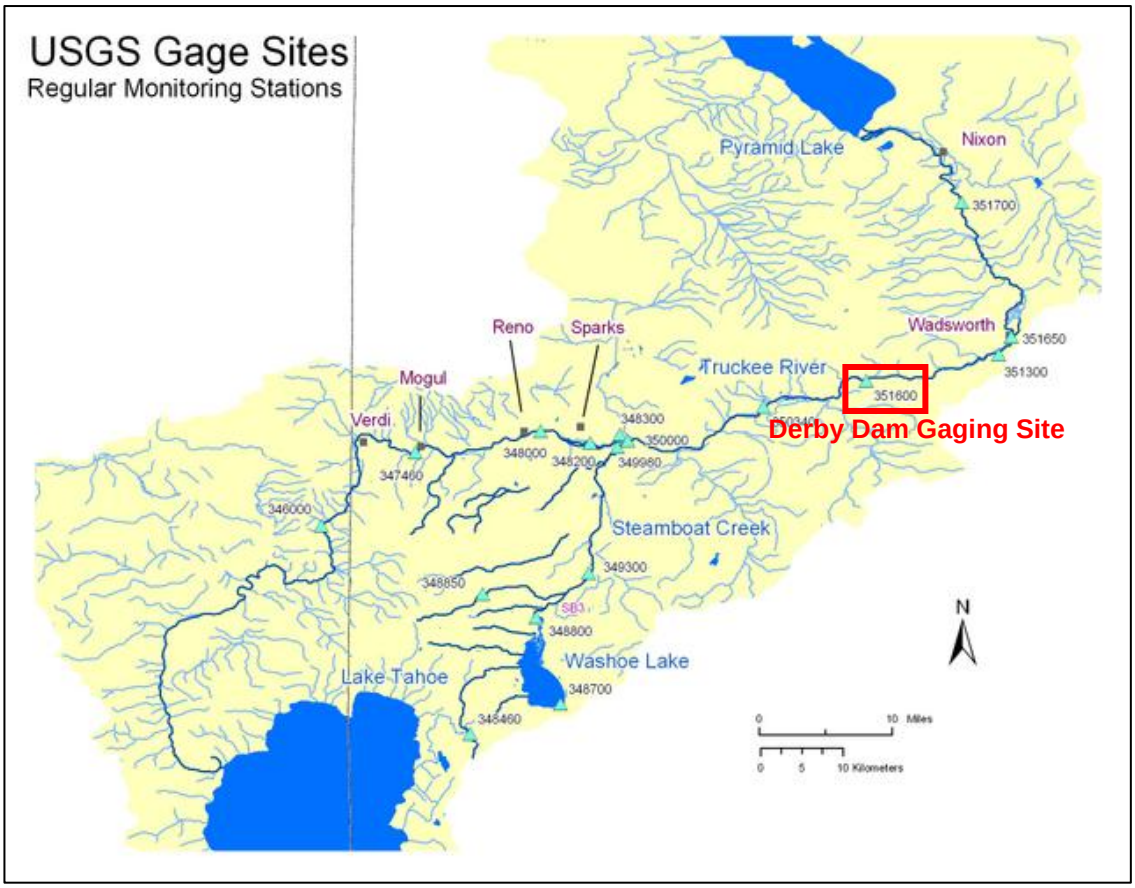


Exhibit 11: USGS Gage Site Locations on the Truckee River

Over the years, these complex and inter-related Truckee River issues have manifested themselves in numerous lawsuits and continuing litigation involving a number of principal interest groups, including: (1) the U.S. Department of the Interior, representing varied interests (i.e., Bureau of Reclamation, Bureau of Indian Affairs, and the U.S. Fish and Wildlife Service); (2) TCID as operator of the Newlands Irrigation Project; (3) the City of Fallon and Churchill County representing domestic water needs in the Lahontan Valley; (4) the Pyramid Lake Paiute Indian Tribe; (5) water purveyors in the Truckee Meadows (i.e., Sierra Pacific Power Company and Washoe County); (6) the cities of Reno and Sparks and the effects of their treated effluent on downstream water quality; (7) the U.S. Environmental Protection Agency representing both the interests of endangered and threatened fish species in Pyramid Lake and Truckee River water quality issues; and (8) the states of Nevada and California.

Normally, biological objectives drive project design for low flows (i.e., July through September). Under many hydrologic regimes, summer flows are often a critical period for fish because of elevated water temperatures and diminished DO. An example of this is that in recent years, the release of water stored in Truckee River reservoirs for the benefit of Pyramid Lake fish was timed to promote the germination of cottonwood trees.

3.3 Water Quality

A portion of the Truckee River is diverted by the Truckee Meadows Water Authority (TMWA) to serve the water needs of the Truckee Meadow region (Reno/Sparks metropolitan areas). Wastewater from the Truckee Meadows is treated at the Truckee Meadows Water Reclamation Facility and is subsequently returned as treated effluent back to the Truckee River, upstream of the area known as the "Vista Reefs." The Truckee River is currently dependent on these return flows and, through the

Truckee River Operating Agreement, is expected to remain dependent on these flows for some time. However, the discharge of and dependence on effluent for river flows is not a desirable condition to the Pyramid Lake Paiute Tribe and to several water using jurisdictions in and near the Lahontan valley (Center for Collaborative Policy, 2006).

Water quality in the lower Truckee River is generally diminishing downstream of Reno due to urbanization and development in the areas upstream of the Derby Dam. Water quality problems include increased water temperature as well as wide fluctuations of seasonal temperature, low flows and a general degradation of chemical and biological parameters making it unsuitable for threatened and endangered fish species. These conditions are substantially greater in the Truckee Meadow reach, below Reno-Sparks Wastewater Treatment Plant, and in the lower reaches below Derby Dam. The temperature increase in the Reno-Sparks portion of the river is due to the increased water temperatures that flow out of Steamboat Creek into the Truckee River and the decrease in the amount of shaded riverine aquatic habitat and riparian vegetation. The lack of shaded riverine aquatic habitat and low water levels below the Derby Dam due to water diversion increases the water temperature in the lower reaches (TNC, 2005).

High levels of nitrogen and phosphorus in the river stimulate algae growth during the summer, causing dissolved oxygen levels to drop (USGS, 1996). The total nitrogen concentration in the Truckee River generally increases downstream of the Reno-Sparks metropolitan area due to a variety of manmade conditions such as development and agricultural practices, and runoff from agriculture fields and fertilized lawns. A large amount of nitrogen and phosphate in the Truckee River comes from Steamboat Creek (Lahontan Regional Water Quality Control Board, 2002). Total Dissolved Solids (TDS) concentrations in the Truckee River have exceeded the State standard in the reaches just downstream from Reno and Sparks. The major contributors of TDS are Steamboat Creek, the North Truckee Drain, and the wastewater treatment plant (Lahontan Regional Water Quality Control Board, 2002).

3.4 Vegetation Communities

A site visit was conducted on February 7, 2006, by Western Botanical Services (WBS) to assess the existing conditions of riparian and upland vegetation on the site. Below is a description of the upland, riparian and wetland vegetation found in the project area during the site visit. In general, vegetation in this area has been impacted by the introduction of exotic (invasive) species, construction of Interstate 80 and the railroad corridors, and USACE flood control projects in the vicinity. An inventory of plant species observed during the site visit is provided as Exhibit 12 (WBS, 2007).

3.4.1 Upland Vegetation

The upland area in the project vicinity is can be characterized as a Great Basin Mixed Scrub Community (Holland, 1986). This community is dominated by big sagebrush (*Artemisia tridentata*), rabbitbrush (*Chrysothamnus nauseosus*), four-wing saltbush (*Atriplex canescens*) and greasewood (*Sarcobatus vermiculatus*).

3.4.2 Riparian Vegetation

Riparian habitats in the vicinity of the Derby Dam study area are found immediately adjacent to the Truckee River. Coyote willow (*Salix exigua*) and cottonwood saplings (*Populus fremontii*) are the primary native vegetation in the project area. A few tall mature cottonwoods are found in the project area; however, most of the vegetation near the river is shrub-height. Tall whitetop (*Lepidium latifolium)*, a noxious weed, is found interspersed with the native riparian vegetation and in large solid stands in the area. It is common in the project vicinity for upland vegetation and riparian vegetation to be interspersed in areas close to the river.

3.4.3 Wetland Vegetation

Based on a field survey and a site-visit that was completed in July 2007, wetlands, as defined under Section 404 of the Clean Water Act (CWA), were located in the dam overflow channel and in a small ponded area at the east end of the project site (Western Botanical Services [WBS], 2007). Standing water in this channel provides habitat for numerous riparian plant species. Dominant species at the dam overflow include a mixture of obligate wetland graminoids, such as species of rush (*Juncus balticus, J. sp*.), common three-square (*Scirpus pungens*), hardstem bulrush (*Scripus acutus*), cattail (*Typha latifolia*) and spikerush (*Eleocharis palustris*). Other herbaceous vegetation includes cudweed (*Gnaphalium palustre*), rabbitsfootgrass (*Polypogon monospeliensus*), curly dock (*Rumex crispus*) and bull thistle (*Cirsium vulgare*).

3.5 Noxious Weeds

The Federal Noxious Weed Act of 1974 (Public law 93-269; U.S.C. 2801) provides for the control and eradication of noxious weeds and their regulation in interstate and foreign commerce. Executive Order (EO) 13112 directs federal agencies to prevent the introduction of invasive (exotic) species and provides for their control and to minimize the economic, ecological, and human health effects that invasive species cause.

The State of Nevada, under administration of the United States Department of Agriculture, designates and lists certain weed species as being noxious (State of Nevada Administrative Code, 2003). “Noxious” in this context means plants not native to Nevada that may have a negative effect on the economy or environment, and are targeted for management or control. Class A weeds have limited distributions within the state. Preventing new infestations and eliminating existing infestations is the priority for Class A weeds. Class B weeds are established in scattered populations in some counties of the state. Control objectives for Class B weeds are to prevent new infestations, and in areas where they are already abundant, to contain the infestation and prevent their further spread. Class C listed weeds are currently established and generally widespread in many counties of the state, and control is not required where heavy infestations exist.

Tall whitetop, a.k.a. perennial pepperweed (*Lepidium latifolium*), and stands of common reed (*Phragmites australis*) extend from the upland vegetation to the toe of the alluvial slopes. Tall whitetop is a Class C state-listed Noxious weed (Nevada Department of Agriculture, 2003).

3.6 Wildlife

Between 1868 and the early 1970’s, the Truckee River corridor experienced an astounding decline in the diversity of bird species. Klebenow and Oakleaf (1984) conducted surveys in the summers of 1972-1976 and detected 65 bird species, representing a 40% loss in species richness compared to similar surveys conducted by Robert Ridgeway who recorded 107 species of birds during his stay at the lower Truckee River in June, 1868. A set of species ranked as "rare" in the 1970's had been "abundant" or "common" during Ridgeway's times. Klebenow and Oakleaf (1984) attributed this decline to settlement along the Truckee River.

Birds that experienced the greatest losses were species whose life history is closely linked to riverine and wetland habitats. American Widgeon (*Anas americana*), Gadwall (*Anas strepera*), Western and Eared grebes (*Aechmophorus occidentalis* and *Podiceps nigricollis*), American Bittern (*Botaurus lentiginosus*), Long-billed Curlew (*Numenius americanus*), American Avocet (*Recurvirostra americana*), Black-necked Stilt (*Himantopus mexicanus*), Black-chinned Hummingbird (*Archilochus alexandri*), Marsh Wren (*Cistothorus palustris*), Common Yellowthroat (*Geothlypis trichas*), Yellow-breasted Chat (*Icteria virens*), and Song Sparrow (*Melospiza melodia*) were absent in the 1970s after being ranked "common" or "abundant" in 1868.

Exhibit 12: Plant Species Identified for the Project Site

Family	BOTANICAL NAME	COMMON NAME	PLANT TYPE
Asteraceae	*Aclepias fascicularis*	narrow-leaved milkweed	native forb
	Artemisisa ludoviciana	Louisiana sage	native forb
	A. tridentate sspI.tridentata	big sagebush	native shrub
	Chrysothamnus nauseosus	rubber rabbitbrush	native shrub
	Chrysothamnus viscidiflorus	yellow rabbitbrush	native shrub
	Cirsium vulgare	bull thistle	weed
	Conyza Canadensis	horseweed	native forb
	Gnaphalium palustre	Western marsh cudweed	native forb
	Guitierrezia sarothrae	snakeweed	native shrub
	Hymenoclea salsola	cheesebush	native shrub
	Iva axillaris	poverty weed	native forb
	Xanthium strumarium	cockelbur	native forb
Brassicaceae	*Lepidium latifolium*	tall whitetop	noxious weed
Chenpodiaceae	*Atriplex canesens*	four-wing saltbush	native shrub
	Bassia hysopifolia	smother weed	weed
	Grayia spinosa	spiny hopsage	native shrub
	Salsola tragus	Russian thistle	weed
	Sarcobatus vermiculatus	greasewood	native shrub
Cyperacae	*Eleocharis palustris*	spikerush	native graminiod
	Carex praegracilis	slender sedge	native graminiod
	Scirpus actus	hardstem bulrush	native graminiod
	Scirpus pugens	common three-square	native graminiod
Eleagnaceae	*Eleagnus angustifolia*	Russian olive	non-native tree
Ephedraceeae	*Epherdra nevadense*	Nevada mormon tea	native shrub
Equisetaceae	*Equisetum arvense*	common horsetail	native 'forb'
	Equisetum hyemale	common scouring rush	native 'forb'
Juncaceae	*Juncus balticus*	Baltic rush	native graminoid
Malvaceae	*Sidalcea ambigua*	globemallow	native forb
Poaceae	*Achnatherum hymenoides*	Indian ricegrass	native grass
	Bromus tectorum	cheatgrass	non-native grass
	Distchlis stricata	inland saltgrass	native grass
	Elymus cinereus	Great Basin wildrye	native grass
	Leymus triticoides	creeping wildrye	native grass
	Phragmites australis	common reed	native grass
	Polypogon monspeliensis	rabbitsfoot grass	non-native grass
Polygonaceae	*Eriogonum spp.*	buckwheat	native forb
	Rumex crispus	curley dock	non-native forb
Rosaceae	*Potentilla sp.*	cinquefoil	native forb
	Prunus andersonii	desert peach	native shrub
	Rosa woodsii	Woods rose	native shrub
Salicacae	*Populus fremontii*	Fremont's cottonwood	native tree
	Salix exigua	coyote willow	native shrub
	Salix gooddingii	black willow	native shrub
Typhaceae	*Typha latifolia*	common cattail	native graminoid

WBS, 2007. Vegetation Analysis: Truckee River Channel: Derby Dam Site, Washoe County, Nevada. July 13, 2007.

Around the turn of the 21st century, after in-stream flows were supplemented and early-successional riparian woodlands re-appeared, species richness increased again. Morrison (1993, 2) reported 87 species during surveys in 1993. In 1998 and 2001, Ammon recorded a total of 95 species, or 89% of the species richness originally reported in 1868. Over 20 species recorded in the 20th century were new additions since Ridgway's time. For example, species such as California Quail (*Lophortyx californicus*), Rock Dove (*Columba livia*), European Starling (*Sturnus vulgaris*), Bewick's Wren (*Thryomanes bewickii*), Brewer's Blackbird (*Euphagus cyanocephalus*), and House Sparrow (*Passer domesticus*) had not been observed in 1868, but are now common breeders along the Truckee River. Many of the newly added species are commensals of human settlement and agriculture, and thus indicate a change in wildlife that parallels the transition toward more artificial landscapes (Ammon, 2001).

With the exception of domestic Pigeons, House Sparrows, and European Starlings, all birds in the project vicinity are protected under the Migratory Bird Treaty Act (MBTA). The MBTA requires all maintenance activities undertaken as part of the proposed action to be implemented in such a way as to avoid effects to bird species protected by the MBTA. Potential for effects on migratory birds is primarily a concern during the breeding season, which occurs during the spring and summer for most bird species.

MBTA also protects neotropical migrants (NTM) or neotropical migratory birds. All neotropical migrants and all songbirds that are listed as species of concern in this document are covered under the MBTA. These species breed in North America and winter in Mexico, Central and South America and the Caribbean.

Data reviewed by Morrison (1993) indicate that several species of NTM were located in habitats adjacent to the study area. Therefore, it was assumed that riparian habitat immediately adjacent to the study area on the Truckee River is occupied at times by one or more of these species, especially during the spring and fall migration periods.

In addition, several other species of birds that are protected by the State of Nevada, such as the Sage Grouse (*Centrocercus urophasianus*), Ferruginous Hawk (*Buteo regalis*), and Black Tern (*Chlidonias niger*) have the potential to pass through the project area as occasional visitors.

The reptile species observed in the Lower Truckee River Valley include side-blotched lizards (*Uta stansburiana*), zebra-tailed lizards (*Callisaurus draconoides*), and Great Basin whiptails (*Cnemidophorus tigris* sp. *tigris*).

The mammal species include two small herds of wild horses (*Equus caballus*) maintained and managed by the BLM in herd management areas. Mule deer are also common in the region and beaver (*Castor canadensis*) are present throughout the Truckee River and both species will be problematic when attempting to establish new riparian vegetation as both are herbivores and difficult to exclude from the project area. Measures will be taken to minimize the impacts of herbivory on the project.

3.7 Threatened and Endangered Species, State Species of Concern, and Other Sensitive Species

The US Fish & Wildlife Service's (USFWS) list of special-status species for the Derby Dam USGS quadrangle map was reviewed and species that could potentially occur in or adjacent to the project area are listed in Exhibit 13.

Two fish species have been identified by the USFWS as threatened or endangered and potentially occurring in the study area. The cui-ui was classified as endangered on March 11, 1967. The Lahontan cutthroat trout (LCT) was classified as endangered in 1970 and reclassified as threatened in 1975.

3.7.1 Lahontan Cutthroat Trout

The Lahontan cutthroat trout (*Oncorhynchus clarki henshawi*) is the largest cutthroat trout subspecies, and the state fish of Nevada. It is native to the drainages of the Truckee River, Humboldt River, Carson River, Walker River, Quinn River, and several smaller rivers in the Great Basin.

Irrigation developments along these rivers have severely disrupted its habitat. On the Truckee River and Pyramid Lake, these cutthroats once flourished but disappeared decades ago due to dam construction, over fishing and introduction of non-native fish. It was classified as an endangered species between 1970 and 1975, and is currently listed as a threatened species. Efforts to restore Lahontan cutthroat trout are underway along the Truckee River and consist of hatchery programs, including one operated by the Pyramid Lake Paiute Tribe.

Exhibit 13: Special Status Species of Storey and Washoe Counties, Nevada

Common Name	Scientific Name	Status
Storey County		
Fish		
Cui-ui	*Chasmistes cujus*	E
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	T
Washoe County		
Birds		
Yellow-billed cuckoo (Sierra Nevada Distinct Population Segment)	Coccyzus americanus	C
Amphibian		
Mountain yellow-legged frog (Sierra Nevada Distinct Population Segment)	*Rana muscosa*	C
Fish		
Warner sucker	*Catostomus warnerensis*	T
Cui-ui	*Chasmistes cujus*	E
Lahontan cutthroat trout	*Oncorhynchus clarki henshawi*	T
Invertebrate		
Carson wandering skipper	*Pseudocopaeodes eunus obscurus*	E
Plants		
Steamboat buckwheat	*Eriogonum ovalifolium var. williamsiae*	E
Webber ivesia	*Ivesia webberi*	C
Tahoe yellowcress	*Rorippa subumbellata*	C

E = Endangered
T = Threatened
C = Candidate
♦ = Proposed for delisting
● = Designated Critical Habitat in County
*** = Believed extirpated from Nevada**
+ = Endangered only in the Virgin River, Muddy River population is a sensitive species.

The Derby Dam is also a migration barrier for Lahontan cutthroat trout located downstream of the project area. These fish historically migrated from Pyramid and Winnemucca Lakes to spawning areas upstream of the City of Reno and into the Tahoe Basin. Reduced inflows to the lakes, combined with the construction of Derby Dam, resulted in a complete blockage of spawning runs by Derby Dam and eventually even out of Pyramid Lake itself. As a result, the original stock of Pyramid Lake-Tahoe Basin Lahontan cutthroat trout was extirpated from the majority of the watershed by the 1950's (Sigler and Sigler 1987; Behnke 1992, U.S. Fish and Wildlife Service 1995b). Currently, this species is stocked into Pyramid Lake and the Truckee River by USFWS and Nevada Department of Wildlife (NDOW).

3.7.2 Cui-ui

The cui-ui (*Chasmistes cujus*), a large sucker fish endemic to Pyramid Lake in northwestern Nevada, was identified by USFWS as potentially occurring in the project area or affected by the proposed project. This species is endemic to the Truckee River and Pyramid Lake. The cui-ui feeds primarily on zooplankton and possibly on nanoplankton (such as algae and diatoms). The maximum size of male cui-ui is approximately 21 inches (530 millimeters) and 3.5 pounds (1.6 kilograms) while females reach approximately 25 inches (640 millimeters) and 6 pounds (2.7 kilograms). The life span of cui-ui is typically about 40 years; the fish do not reach sexual maturity until 8 years of age. The cui-ui is not only an endangered species, but is also one of the few surviving members of its genus.

The cui-ui is anadromous, and will attempt to ascend the Truckee River to spawn in mid-April. The cui-ui needs cool water temperatures and suitable water quality for its fry to survive. The cui-ui population is generally improving in numbers, having attained an estimated population exceeding one million in 1993.

Cui-ui remains critically endangered because in the 1970s and 1980s there was virtually no ability for the fish's population to remain stable due to unsuccessful spawning in an unfavorable water quality and water flow environment of the lower Truckee River. The species outlook is somewhat optimistic, since there is a published recovery plan based on an enhanced understanding of Pyramid Lake and Truckee River water quality and the adoption of a protection plan by the U.S. Congress.

The Derby Dam at the proposed project location has been a migration barrier for the cui-ui. Reclamation constructed a rock channel fishway in 2003 to remove the barrier, however cui-ui are unable to reach Derby Dam due to other river impediments below the dam. Historically, cui-ui used the lower Truckee River upstream from Reno to near the current location of Derby Dam as a spawning area. Currently this species is distributed only in Pyramid Lake and the lower Truckee River below Numana Dam (See Exhibit 1) (USFWS, 1992).

3.7.3 Species of Concern

The species of concern identified by the USFWS and NDOW are discussed below. In addition to federally listed species, Nevada's Department of Conservation and Natural Resources (DCNR), Natural Heritage Program website (NNHP, 2006) lists flora and fauna species that are considered endangered, threatened, or species of concern by the State of Nevada.

Steamboat Monkeyflower (*Mimulus ovatus*)

The Steamboat monkeyflower is recommended for full protection by the State of Nevada. It is an annual herb that is generally found in dry to somewhat moist, often barren, loose, sandy to gravelly slopes or possibly on sandy alkaline valley floor deposits in the sagebrush zone. It may also be found on adjacent roadsides or washes. This species could potentially occur in the area; however, this species was not documented in the project area during site visits.

Sand Cholla (*Opuntia pulchella*)

The sand cholla is protected by the State of Nevada under Chapter 527 N.R.S. 527.060-.120. The sand cholla is a cactus generally found in sand dunes, dry-lake borders, river bottoms, washes, valleys, and plains in the desert. This type of habitat does not occur in the project area so this species is not likely found in the project area. This species was not documented during site visits

Oryctes (*Oryctes nevadensis*)

Oryctes is classified as a Nevada special status species by the BLM. Oryctes is a small, annual herb that occurs in sand dunes or deep sand habitats. This annual appears only in years with optimal rainfall and temperature patterns and is therefore difficult to inventory. No sand dunes or deep sand habitats are found in the project area so this species is not likely found in the project area. This species was not observed during field visits.

Rainbow trout (*Anodonta californiensis*)

This species was introduced into the Truckee River to provide sport fishing opportunities and has replaced the native Lahontan cutthroat trout as a major sport fish in the last 70 years (Moyle, 1976, La Rivers 1994, U.S. Fish and Wildlife Service 1995b, Dill and Cordone 1997). Naturally spawning populations exist in the Truckee Rive and most likely in the project area.

Brown trout (*Salmo trutta*)

This species was introduced into the Truckee River in 1895 to provide sport fishing opportunities and has replaced, along with rainbow trout, the native Lahontan cutthroat trout as a major sport fish in the last 70 years. Naturally spawning populations exist in the Truckee River and most likely in the project area.

Mountain whitefish *(Prosopium williamsoni)*

This native species is a fish of special concern for NDOW managers. It provides additional sport fishing opportunities in the river adjacent to the study area. This species is naturally reproducing in the river. It is not known to be present in the lower Truckee River at Derby Dam.

Northwestern pond turtle (*Clemmys marmorata marmorata*)

This species inhabits marshes, sloughs, moderately deep ponds, and slow-moving rivers. The species formerly occurred in segments of the Truckee River. Unverified reports have been made of this species in Oxbow Nature Center, upstream of the study area. No Northwestern pond turtles were observed in the project area.

Bald Eagle (*Haliaeetus leucocephalus*)

The Bald Eagle Protection Act was passed in 1940. Nonetheless, human persecution, intentional and unintentional, continued, and the Bald Eagle was listed as endangered under the Endangered Species Act (ESA). Encouraging evidence of recovery across the species' range led to the down-listing to threatened in 1995, and removal from the endangered species list in June, 2007.

The species is largely dependent on aquatic habitats (seacoasts, rivers, swamps, lakes) for breeding and wintering and for foraging during migration (American Ornithologists' Union [AOU], 1983). Only two pair of Bald Eagles nested in northwest Nevada in 1997, and the winter count for the state that year was 90 (Buehler, 2000). Large, mature trees are present but not common in the section of the Truckee River below Derby Dam, minimizing the likelihood that nesting may occur near the project site. However, bald eagles may occasionally visit the project area to forage for food along the river.

Yellow-billed cuckoo (*Coccyzus americanus*)

This species is protected by the State of Nevada and is identified as a candidate for listing as endangered or threatened under the Endangered Species Act. The yellow-billed cuckoo inhabits extensive deciduous riparian thickets or forests with dense, low-level or understory foliage. The habitat for nesting does not occur on the lower Truckee River. In the study area, no documented reports have been made of the presence of this species.

Neo-tropical migrants

These species are protected by both federal statute and the State of Nevada. Species within this group of birds may seasonally occur within the riparian areas adjacent to the study area during migration. Some nesting may occur in the native and exotic riparian tree canopy. Neither the USFWS nor NDOW identified this group of species as a species of concern.

Tri-colored blackbird (*Agelaius tricolor*)

This species is protected by the State of Nevada. Tri-colored blackbirds utilize emergent wetland habitats where dense cattails or tules, blackberry willow, or other tall shrubs and herbs provide nesting areas. No documented sightings of this species have occurred in the project area, nor are there any suitable habitat locations in, or adjacent to, the study area.

Bats

USFWS indicated seven species of bats as being species of concern and potentially occurring within the study area. The State of Nevada lists one bat, the spotted bat (*Euderma fuscus*), as protected. There is a limited potential for roosting and maternity habitat within and adjacent to the study area. This may occur both in the large trees in the riparian zone along the Truckee River, in old buildings, and on the bridge structures along the existing rail line.

River Otter (*Lontra canadensis*)

The river otter is a member of the weasel family that is distributed throughout most of North America. The river otter is designated as a Sensitive Status Species by the State of Nevada. This species is found anywhere there is a permanent food supply and easy access to water. They can live in freshwater and coastal marine habitats, including rivers, lakes, marshes, swamps, and estuaries. River otters can tolerate a variety of environments, including cold and warm latitudes and high elevations. North American river otters are sensitive to pollution and disappear from areas with polluted waters. There is limited suitable habitat in the project area.

3.8 Cultural Resources

Cultural resources represent and document activities, accomplishments, and traditions of previous civilizations and link current and former inhabitants of an area. Depending on their conditions and historic use, these resources may provide insight to living conditions in previous civilizations and may retain cultural and religious significance to modern groups.

Archaeological resources comprise areas where prehistoric or historic activity measurably altered the environment or deposits of physical remains (e.g., arrowheads, bottles) discovered therein. Architectural resources include standing buildings, districts, bridges, dams, and other structures of historic or aesthetic significance. Architectural resources generally must be more than 50 years old to be considered for inclusion in the National Register of Historic Places (NRHP), an inventory of culturally significant resources identified in the U.S.; however, more recent structures, such as Cold War-era military resources, may warrant protection if they have the potential to gain significance in the future. Traditional cultural resources can include archaeological resources, structures, neighborhoods, prominent topographic features, habitats, plants, animals, and minerals that Native Americans or other groups consider essential for the persistence of traditional culture.

The principal federal law addressing cultural resources is the National Historic Preservation Act (NHPA) of 1966, as amended (16 USC Section 470), and its implementing regulations (36 CFR 800). The regulations, commonly referred to as the Section 106 process, describe the procedures for identifying and evaluating historic properties; assessing the effects of federal actions on historic properties; and consulting to avoid, reduce, or minimize adverse effects. As part of the Section 106 process, agencies are required to consult with the State Historic Preservation Office (SHPO). Section 106 of the NHPA requires that federal agencies take into account the effect of their undertakings on historic properties. The term “historic properties” refers to cultural resources that meet specific criteria for eligibility for listing on the NRHP; historic properties do not need to be formally listed on the NRHP. Section 106 does not require the preservation of historic properties, but ensures that the decisions of federal agencies concerning the treatment of these places result from meaningful considerations of cultural and historic values and of the options available to protect the properties.

3.8.1 Historic Context

The following includes discussions of the prehistory, ethnography, and history of the general locality surrounding the Truckee River and are primarily derived from Obermayr and Branch (2007), Pendleton *et al*. (1982), and other individuals that have conducted studies in the larger region. The

Nevada Comprehensive Preservation Plan (White *et al.* 1991) also offers a series of historic themes useful to establish a context for this area. The relevant themes include Exploration and Early Settlement, Ranching and Agriculture, and Reclamation and Irrigation.

3.8.2 Prehistory

The prehistoric chronology begins with the PaleoIndian Period, which ranges from approximately 12,000 to 7,000 years before present (B.P.). PaleoIndian sites contain specialized artifact forms and are frequently "on gravel bars and spits, or on high ground along the margins of extinct lakes" (Bundy 1987:12). The settlement patterns suggest a mobile foraging strategy that used small groups to exploit a limited range of high caloric resources with a specialized tool kit, and the role of gathering reliable food resources appears to be minimized (Elston, 1986; Fowler and Liljeblad, 1986).

The Early Archaic Period dates from 7,000 to approximately 4,000 years B.P. This period is referred to climatically as the altithermal and is thought to be associated with a warming of the environment and reduction of effective moisture. Objects associated with plant processing increase in frequency during this period, and the quantity and diversity of projectile point forms indicates that hunting remained a highly valued pursuit. The population density remains low and sites from this period are found in cave shelters and "on the margins of lakes and near other permanent water sources" (Bundy 1987:12).

The Mid-Archaic Period spans 4,000 to 2,500 years B.P., and generally represents a gradual shift from the Early Archaic period. The "major changes seem to be in settlement and subsistence patterns, stylistic elaboration, and apparent population density" (Elston 1986:142). The climate appears to have been moister with a shift to a winter pattern of precipitation with resultant shallow lakes. This period is characterized by the occurrence of "a diversity of textiles and other perishables, by changes in the size and complexity of house structures, by the stylistic variety or [sic] projectile points, by increasing evidence of trans Sierran trade and perhaps also by craft specialization" (Pendleton et al. 1982:37).

The Late Archaic period ranges from 500 to 1,500 years B.P. The bow and arrow is introduced during this period. Increased reliance on plant foods is indicated by the presence of hullers or hand stones. Subsistence focus moved to seed processing, fish, and small game with use of pinyon thought to appear during this period (Bettinger 1975). Population appears to shift towards more diverse, smaller households with less frequent reoccupation of major habitation sites (Pendleton et al. 1982).

3.8.3 Ethnography

The Northern Paiute and Washoe Tribes ethnographically overlap the Truckee River area. The Northern Paiute were distributed over western Nevada between the Sierra crest and Reese River and as far south as Mono Lake. Their territory extended north to about the Deschutes and John Day Rivers southeastern Oregon and Snake River in the southwest corner of Idaho (Fowler and Liljeblad 1986:435,437). In contrast, Washoe people traversed a much smaller territory roughly centered around Lake Tahoe. Their territory encompassed the Carson Valley and Truckee, Carson, and Walker Rivers, the crest of the Sierra Mountains, and extended north to Honey Lake and south as far as the Stanislaus River (D'Azevedo 1986:467-468).

Both tribes share similarities in subsistence and settlement patterns in the vicinity of Lake Tahoe and the Carson Valley. Food was acquired through seasonal rounds with permanent settlements located on high ground near rivers and springs and a variety of seasonal camps in the valleys and mountains (D'Azevedo 1986:472). Fish, including Lahontan sucker (*Pantosteus lahontan*), cui-ui, mountain whitefish, and Lahontan cutthroat trout, were caught from numerous lakes. Large mammals, primarily mule deer (*Odocoileus hemionus*), pronghorn antelope (*Antilocapra americana*), and mountain sheep (*Ovis canadensis*), were hunted with bow and arrows and butchered with stone knives and other

implements. Other small mammals were hunted, the most plentiful and important being hares and rabbits.

A wide variety of plant foods were intensively pursued form early spring until late fall and were a primary factor in dispersal of the local populations. Bulbs and roots, such as bitterroot, sago lily, and white onions, were gathered from valleys and mountain meadows. Mustard, wild rye, and sunflower seeds, among others, were harvested with seed beaters and woven baskets and processed using bedrock mortars and pestle or with portable manos and metates. Pine nuts were acquired from the Sierra Nevada mountains and acorns from groves in the California foothills. Berries were highly sought after, including chokecherry (*Prunus virginiana*), elderberry (*Sambucus glauca*), buckberry (*Shepherdia argentea*), desert and golden currant (*Ribes* ssp.), Sierra plum (*Prunus* ssp.) and Sierra gooseberry (*Ribes roezlii*) (D'Azevedo 1986:473-475).

3.8.4 History

Early exploration, trapping expeditions, and government sponsored surveys crisscrossed the western Great Basin from the 1820s to the 1850s. Well-known expeditions were led by Jedediah Smith, Peter Skene Ogden, Joseph Walker, and John C. Fremont.

The California Emigrant Trail was the primary route into California, especially after the discovery of gold in 1848. This trail passes to the east and south of the Pyramid Lake from Lovelock and forks on the east side of Carson Sinks; one branch heads south toward Fort Churchill and Virginia City (Walker River Route) and the other (Truckee River Route) southwest towards Wadsworth and Reno (Fowler and Liljeblad 1986:456). The Truckee River Route followed the Truckee River through a steep canyon between the Virginia and Pah Rah Mountain Ranges between Wadsworth and Reno, which remained one of the primary transportation corridors to Reno and the Sierra gold mines.

The Central Pacific Railroad (CPRR) also utilized the Truckee River canyon as the easiest way through the mountains from Reno to Wadsworth. Construction of the CPRR proceeded through Reno, the Truckee Meadows, and then the Truckee River canyon to Wadsworth, at the Big Bend of the Truckee River. The construction of the CPRR was the first large construction project whose progress was photographically documented. Hersh (1998) presents 108 comparative photographs of the CPRR, circa 1868 by Alfred A. Hart, as its construction progressed across Nevada. Photo #304 is a 1868 view possibly just west of Derby Dam illustrating the CPRR, I-80, and the current route of the Central Pacific, now the Southern Pacific, Railroad (Hersh 1998:46).

The CPRR was leased by the Southern Pacific Railroad in 1885, though it remained a corporate entity until 1959 when it was formally merged into the Southern Pacific. After the Southern Pacific took over the railway in 1889, much of its Nevada alignment was relocated. The old CPRR grade between Sparks and Wadsworth was deeded to Washoe County for road purposes in 1904. In 1917, this road became a portion of State Road 1, which became the Nevada section of the Victory Highway in 1920. Federal Highway names were replaced by a numerical system in 1925, when the Victory Highway became U.S. Highway 40 (NVOHP 2002).

Highway 40 is one of the original 1926 interstate highways, connecting San Francisco, California and Atlantic City, New Jersey. The National Defense and Interstate Highway Act of 1956 identified Highway 40 as a major national transportation corridor. Highway 40 was converted to Interstate 80 between 1960 and 1964. Most of Highway 40 in Nevada, including the portion through the Truckee River canyon, was absorbed by Interstate 80 (Caltrans 2006).

The Township in which Derby Dam is located was survey by the General Land Office in 1866, 1907, and 1909. By 1909, the CPRR, the "Reno Wagon Road" (California Emigrant Trail), and two telephone lines connected Reno and Wadsworth. The 15 minute quadrangle map dated 1957 depicts

the alignments of U.S. Highway 40 and the SPRR through the Truckee River Canyon west of Wadsworth as well as Derby Dam.

Derby Dam on the Truckee River was the first facility constructed for Reclamation's Newlands Project. The first construction specification the U.S Reclamation Service, now the Bureau of Reclamation, issued was for the Truckee River Diversion Dam, now the Derby Diversion Dam, which was completed by June 1905. The Truckee Canal, as well as a timber chute to the Carson River that was later replaced by a concrete chute that discharges into Lahontan Reservoir, were completed in November 1906. This permitted the diversion of Truckee River water for use in the Carson Division for the first time in 1907.

The Newlands Project National Register of Historic Places (NRHP) status has a confusing history. Derby Dam was nominated and listed as an individual property in 1978. There was a thematic nomination in 1981 that proposed the listing of the entire Newlands Project. Only two elements, however, were actually listed, Carson Diversion Dam and Lahontan Dam and Powerhouse. The remaining elements were not listed because of ambiguous boundaries, although an assumption remained that the entire Newlands Project was indeed listed. Reclamation became aware of the ambiguity surrounding the Newlands Project NRHP status in the late 1990s. Reclamation commissioned Hardesty and Buhr (2001) to clarify the eligibility issue of the Newlands Project and to identify criteria by which conveyance features would be eligible for inclusion in the NRHP. This evaluation led Reclamation to develop a formal Newlands Project Multiple Property Nomination (Pfaff 2003). The Keeper of the NRHP accepted this nomination, although the only Newlands Project features actually listed on the NRHP were those structures that were previously listed.

Reclamation constructed a fish passage, flood bypass channel modification and automation of the dam gates project at Derby Dam in 2001 and developed a Memorandum of Agreement with SHPO to mitigate adverse effects. Reclamation determined that the Truckee Canal was eligible for listing on the NRHP under Criteria A and C by consensus with the Nevada Office of Historic Preservation on January 10, 2008. The Truckee Canal is a pivotal structure within the Newlands Project, one of the first five Reclamation projects authorized, and the design for Derby Dam and the Truckee Canal were one of the first specifications issued by the newly formed Reclamation Service (Pfaff 2003).

3.9 Indian Trust Assets

Indian trust assets (ITAs) are legal interests in assets that are held in trust by the United States Government for federally recognized Indian tribes or individuals. The trust relationship usually stems from a treaty, executive order, or act of Congress. The Secretary of the Interior is the trustee for the United States on behalf of federally recognized Indian tribes. “Assets” are anything owned that holds monetary value. “Legal interests” means there is a property interest for which there is a legal remedy, such a compensation or injunction, if there is improper interference. Assets can be real property, physical assets, or intangible property rights, such as a lease, or right to use something. ITAs can not be sold, leased or otherwise alienated without the United States’ approval. Trust assets may include lands, minerals, and natural resources, as well as hunting, fishing, and water rights. Indian reservations, rancherias, and public domain allotments are examples of lands that are often considered trust assets. In some cases, ITA assets may be located off trust land.

Reclamation shares the Indian trust responsibility with all other agencies of the Executive Branch to protect and maintain ITAs reserved by or granted to Indian tribes, or Indian individuals by treaty, statute, or executive order.

ITAs must be addressed in accordance with Secretarial Order 3175 and Reclamation ITA policy. The Pyramid Lake/Truckee-Carson Water Rights Settlement -- (Title II of P.L. 101-618, the Fallon Paiute Shoshone Tribal Settlement Act, signed into law on November 9, 1990; 104 Stat. 3289) includes a multitude of provisions affecting the USFWS decisions with respect to endangered species, wetlands

and wildlife, and studies for management of the Truckee River reservoirs and the lower Truckee River. However, because the proposed action does not involve the acquisition of water rights or the diversion of water from the Truckee River, no effects are anticipated.

The following tribes have interests in the Truckee River: Pyramid Lake Paiute Tribe—Pyramid Lake Indian Reservation (which includes Pyramid Lake) in Nevada; Reno-Sparks Indian Colony—Reno and Hungry Valley, in Nevada; Fallon Paiute-Shoshone Tribes—Fallon Paiute-Shoshone Reservation and Fallon Colony in Nevada; and Washoe Tribe of Nevada and California.

Trust resources of these Tribes include land, water rights, and fish and wildlife; incomes are derived from these resources. The Tribes are concerned with regional water quality and quantity, water distribution, fish and wildlife, and wetlands.

3.9.1 Pyramid Lake Indian Reservation

The formal recognition of the trust relationship between the Pyramid Tribe and the United States can be based on the 1859 withdrawal for Indian use of "a tract of land in the northern portion of the valley of the Truckee River, including Pyramid Lake." After subsequent surveys, an Executive order was issued in March 1875 that further acknowledged the reservation of the Pyramid Lake Paiutes. The reservation presently covers 475,085 acres.

P.L. 101-618 affirmed that "all existing property rights or interests, all of the trust land within the exterior boundaries of the Pyramid Lake Indian Reservation shall be permanently held by the United States for the sole use and benefit of the Pyramid Tribe (Section 210[b][1])." This legislation also recognizes Anaho Island as a part of the reservation and affirms tribal ownership of the Pyramid Lake lakebed and the beds and banks of the lower Truckee River.

3.9.2 Reno-Sparks Indian Colony

The Reno-Sparks Indian Colony was created in 1916, when 20 acres were set aside in Reno for use by members of the Northern Paiute, Washoe, and Western Shoshone people. An additional 8 acres were added later. Recently, the colony acquired 1,920 acres in Hungry Valley north of Reno. The land is used primarily for residential purposes.

3.9.3 Fallon Indian Reservation and Colony

The Fallon Paiute-Shoshone Indian Reservation is located in Churchill County in west-central Nevada, approximately 10 mile northeast of Fallon and 65 miles east of Reno and Carson City. The reservation was created following the General Allotment Act of 1887, when members of the Paiute and Shoshone Tribes were allotted about 31,360 acres in the Lahontan Valley. The lands were located in an area that would become part of the Carson Division of the Newlands Project. In 1906, an agreement was made in which Tribal members would exchange their original 160-acre allotments of nonirrigable lands for 10-acre allotments of irrigable lands with paid up water rights. A 1907 order by Interior reserved 4,640 acres on behalf of Tribal members who had relinquished their original allotments. An additional 840 acres adjoining the north boundary of the reservation were set aside in 1917. Water was first delivered to the allotted lands between 1908 and 1910. Currently, 5,513 of the 8,156 acres of the reservation are water righted. Approximately 1,800-3,175 acres have been irrigated. The Fallon Indian Colony was established with 40 acres, with an additional 20 acres added in 1958; Colony land is used for residential and commercial purposes.

3.9.4 Washoe Tribe of Nevada and California

The Washoe Tribe of Nevada and California is a federally recognized Indian tribe organized pursuant to the Indian Reorganization Act of June 18, 1934, as amended. The Tribal office is located in Gardnerville, Nevada. The Washoe Tribe has four communities, three in Nevada (Stewart, Carson, and Dresslerville), and one in California (Woodfords). There is also a Washoe community located within the Reno-Sparks Indian Colony. The Washoe Tribe has jurisdiction over trust allotments in both Nevada and California, with additional Tribal Trust parcels located in Alpine, Placer, Sierra, Douglas, Carson, and Washoe Counties; it has cultural interests at and near Lake Tahoe but does not exercise any water rights in the Lake Tahoe or Truckee River basins. Tribal history extends an estimated 9,000 years in the Lake Tahoe basin and adjacent east and west slopes and valleys of the Sierra Nevada. The present day Washoe Tribe has deep roots in the past, radiating from Lake Tahoe, a spiritual and cultural center, and encompassing an area that stretches from Honey Lake to Mono Lake.

3.9.5 Water Rights

3.9.5.1 Pyramid Tribe

The Federal actions that set aside Pyramid Lake Indian Reservation explicitly reserved Pyramid Lake for the Tribe's benefit. Water rights for the reservation were claimed by Interior in 1913, at the same time Interior was claiming water for the Newlands Project. When the *Orr Ditch* decree was finally issued in 1944, the Pyramid Tribe was given an appropriation date of 1859, senior to all other appropriators. Under the *Orr Ditch* decree, the Pyramid Tribe was allocated for irrigation an amount not to exceed 4.71 acre-feet per acre for 3,130 acres of bottomland farm (14,742 acre-feet) (Claim No. 1) and another 5.59 acre-feet per acre for 2,745 acres of benchlands (15,345 acre-feet) (Claim No. 2). Other than irrigation, no additional water was allocated for the fish or fish habitat in Pyramid Lake or the lower Truckee River.

Over the years, the Tribe has actively worked to protect Pyramid Lake and increase inflow to the lake. With the elevation of Pyramid Lake falling and flows diminishing, the Tribe, in 1973, sought to reopen the *Orr Ditch* decree to obtain additional water rights for the lake and its fishery. The Tribe alleged that the Federal Government had breached its trust responsibility when it defended water rights for the Newlands Project and did not diligently defend Tribal water rights for all purposes. Following lengthy litigation, the U.S. Supreme Court ruled in 1983 that the *Orr Ditch* decree was final and binding.

When Interior implemented operating criteria for the Newlands Project in 1967, the Tribe intervened, claiming that the Secretary was taking his trust responsibilities too lightly. The Secretary was advised that his trust responsibilities included conserving water for the Tribe. Interim implementation of the Newlands Project's Operating Criteria and Procedures decreased diversions from the Truckee River; thus allowing additional water to flow into Pyramid Lake. Additionally, Stampede Reservoir and, to a lesser degree, Prosser Creek Reservoir, are operated to supplement unregulated Truckee River flows for the benefit of Pyramid Lake fishes.

3.9.5.2 Fallon Paiute-Shoshone Tribes

The Fallon Tribes entered into a settlement agreement that was ratified by Congress as Title I of P.L. 101-618, or the Fallon Paiute-Shoshone Indian Tribes Water Rights Settlement Act of 1990. Section 103 of P.L. 101-618 limits annual water use on the reservation to 10,587.5 acre-feet (equivalent to 3,025 acres). It also, however, permits the Tribes to acquire up to 2,415.3 acres of land and up to 8,453.55 acre-feet of water rights. These water rights may be used for irrigation, fish and wildlife, M&I, recreation, or water quality purposes, or for any other beneficial use subject to applicable laws of the State of Nevada.

An expanded irrigation system was envisioned by P.L. 95-337 and enacted by the Congress in 1978; however, the construction of this system was not pursued and was superseded by a financial settlement as part of P.L. 101-618. BIA entered into an agreement with FWS in 1995 to acquire water rights for reservation wetlands; under that agreement, 1,613.4 acre-feet of water rights have been acquired. Water rights on and appurtenant to the reservation are served by Newlands Project facilities pursuant to OCAP.

3.9.5.3 RENO-SPARKS INDIAN COLONY

Members of the Reno-Sparks Indian Colony believe they may have rights to about 30 acre-feet of water under the *Orr Ditch* decree.

3.9.6 Fish and Wildlife

3.9.6.1 PYRAMID TRIBE

The Pyramid Lake fishery remains one of the cultural mainstays of the Pyramid Tribe. To protect the fishery, the Tribe maintains two hatcheries; is working cooperatively with Federal, State, and private agencies to protect spawning areas and improve river access for spawning, as noted below; and seeks more inflow to Pyramid Lake, as noted previously. The Tribal fishery program operates hatcheries at Sutcliffe and Numana. Tribal hatcheries raise both the threatened LCT and endangered cui-ui. LCT hatcheries support a world-class fishery; the cui-ui hatchery is a "fail-safe" operation to maintain the strain in case of catastrophic event.

The Tribe uses a portion of the interest from the principle of the $25-million Pyramid Lake Paiute Fisheries Fund, provided under section 208 of P.L. 101-618, for management of the Pyramid Lake fishery. As part of endangered and threatened species recovery efforts, the Federal Government, in consultation and coordination with the Pyramid Tribe, is developing a plan for rehabilitating lower Truckee River riparian habitat to enhance fish passage and spawning. Improvements have occurred to Marble Bluff Dam facilities. Along with conserving fish, the Pyramid Tribe manages and controls fishing and hunting rights on the reservation.

3.9.6.2 FALLON PAIUTE-SHOSHONE TRIBES

The Tribe has dedicated reservation acreage to be used for wetland habitat for wildlife.

3.9.7 Trust Income

P.L. 101-618 established the $43-million Fallon Paiute-Shoshone Tribal Settlement Fund, the $25-million Pyramid Lake Paiute Fisheries Fund, and the $40-million Pyramid Lake Paiute Economic Development Fund. Interest on the Fallon Paiute-Shoshone Tribal Settlement Fund may be spent according to the Fallon Tribes' investment and management plan for this fund. The Pyramid Tribe has complete discretion to invest and manage the Pyramid Lake Paiute Economic Development Fund; however, funds are not available to the Tribe until TROA becomes effective.

3.10 Socioeconomic Resources

Socioeconomic resources include population and economic activity. Some related secondary components, such as housing availability and public services, are not considered in this analysis because the Proposed Action has no potential to generate measurable changes in populations that will create demand for these resources. The nearest principal population center (Reno/Sparks) is located in Washoe County approximately 20 miles west of the project area. Due to the lack of nearby populations, minimal statistics at the county level are used to describe the socioeconomic context. The project area includes Storey and Washoe Counties which are divided by the Truckee River. The

ethnicity of the majority race (80.5 percent) of the residents in the two counties is White (U.S. Census, 2000). Other ethnicities of persons in the counties include Hispanic/Latino (16.5 percent), Asian (4.2 percent), American Indian/Alaska Native (1.8 percent), Native Hawaiian/Other Pacific Islander (0.5 percent) and African American (2.1 percent). The combined population of Washoe and Storey Counties represented just over 17 percent of the total population of Nevada in 2000 (Exhibit 14).

Exhibit 14: Population Statistics for Washoe and Storey Counties, Nevada

	Storey County	Washoe County	Nevada
Population 2000	3,399	339,486	1,998,257
Estimated pop 2007	4,193	406,079	2,565,382

Three Indian reservations are located in the vicinity of the proposed action: the Reno/Sparks Indian Colony, located in the City of Reno and north of Reno, the Pyramid Lake Paiute Indian Reservation which encompasses Pyramid Lake within its jurisdictional boundaries, and the Fallon Paiute-Shoshone Indian Reservation, near Fallon. These three tribal entities as well as the Washoe Tribe of Nevada and California are regional stakeholders that have historical, cultural, and traditional investments in the Lower Truckee River basin.

According to the U.S. Census, the Pyramid Lake Paiute Indian Reservation is located thirty-five miles north of Reno, Nevada where a population of 1,603 exists on the reservation with 12% of the population residing outside the reservation; a population of 1,291 existed in 2000. Economy of this reservation is centered on fishing and recreational activates at the Lake. Pyramid Lake Cattleman's Cooperative Association utilizes the reservation desert region for open range and management of individual cattle and calf-livestock operations. As of 2000, the Fallon Paiute-Shoshone listed 517 persons as total members of their reservation.

The Reno-Sparks Indian Colony is a federally recognized Indian Tribe located near Reno and Sparks, Nevada. The tribal membership consists of 481 members from three Great Basin Tribes - the Paiute, the Shoshone, and the Washoe. They make up the majority of people who live within the reservation land base. The reservation lands consist of the original twenty-eight acre residential Colony located in downtown Reno and the 1,960 acre Hungry Valley reservation located nineteen miles north of the downtown Colony, in a more rural setting. Additional information on Tribal use of the area is covered in the Cultural Resources and Tribal Assets sections of this document.

3.11 Environmental Justice

Environmental justice, defined by the USEPA is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. The planning and decision making process for actions proposed by federal agencies involves a study of other relevant environmental statutes and regulations including Executive Order (EO) 12898, "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," which was issued by President Clinton on February 11, 1994.

The Proposed Action has been reviewed for compliance with EO 12898. Environmental justice concerns also reflect consideration of EO 13045, "Protection of Children from Environmental Health Risks and Safety Risks." This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are

defined as “risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest.”

As discussed in the previous section of this document, no one resides within or adjacent to the proposed project area.

3.12 Land Use

Residential land use densities vary dramatically throughout unincorporated Washoe County. Generally, densities become progressively lower as development moves outward from the Truckee Meadows, transitioning to rural densities in the outlying basins. Rural land use is the predominant land use outside of Truckee Meadows. Washoe County has completed an analysis of Truckee River Water Rights Availability by land use. This figure is presented as Exhibit 15. The predominant rural land use is large-lot residential, open space and agriculture. The general rural classification preserves land with development constraints, land that should be preserved for conservation reasons, or land that is not planned to receive the services and facilities needed for development.

The Washoe County Comprehensive Plan (Washoe Country, 2003) regulates land use in the project area north of the Truckee River. The County has zoned the northern portion of the project area as open land use. Storey County regulates the land use south of the Truckee River. The County has zoned the southeast portion of the project area as agricultural land use.

Along the river corridor itself, land on both sides downstream of Derby Dam is principally managed by Reclamation. Parallel to the river corridor, the Truckee-Carson Irrigation District (TCID) operates and maintains the Newlands Project’s Truckee Canal on behalf of the federal government. TCID has a contract with Reclamation to operate and maintain the Newlands Project. As such, TCID has concerns about bank stability along the stretch of the Lower Truckee River and the potential for undercutting of the Truckee Canal and vegetation growth on the canal embankment.

The Union Pacific Railroad also operates a corridor of rail through the project area for its east-west routes, and has ownership of parcels of land between the rail corridor and the river within the study area. As such, the Railroad has expressed concerns about temporary easement to the study site and the use of railroad land for work staging areas.

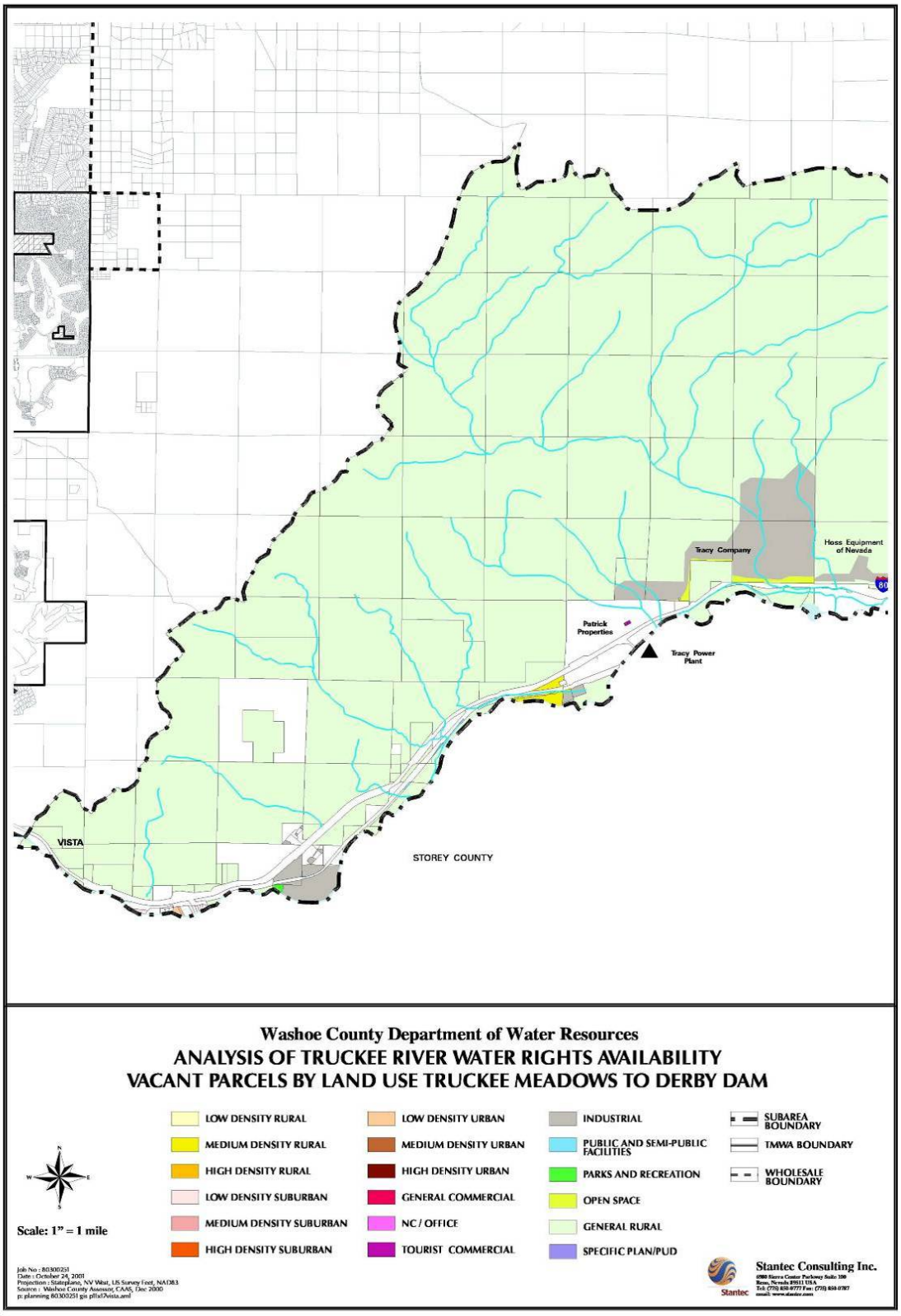


Exhibit 15: Land use for Washoe County, Nevada

3.13 Land Ownership

Land ownership information was collected from Washoe County, Storey County, Reclamation and part of the City of Reno Draft Conceptual Design Report (2006). The land ownership on both sides of the river downstream of Derby Dam is principally Reclamation (along the river channel) and Union Pacific Railroad properties. Interstate 80 transects this portion of Washoe County (east-west) approximately 1 mile north of Derby Dam.

The proposed project would be consistent with Washoe County's current zoning of open land use. The portion of the project area in Storey and Washoe Counties would not change from its current designation of open land use. Open land use does not conflict with current zoning of either Washoe or Storey Counties (Storey County Code Book, 1999 and Washoe County Plan code of Ordinances and Regional Plan, 2003).

3.14 Recreation

Within Storey County's 16,000 acres, recreational opportunities include hiking, camping, horseback riding, 4-wheeling, bicycling, bird watching, hunting and fishing. Storey County embraces the historical legacy of railroads and silver mining, offering rides aboard the Virginia & Truckee Railroad, as well as guided tours of the Chollar Mine, and the Best & Belcher Mine at the Ponderosa.

Washoe County recreational activities include skiing, fishing, and hiking. Over 6,000 acres of parks and open space provide outdoor adventures for all ages. Washoe County Parks also host a variety of major special events such as the Great Reno Balloon Race (The Nevada Commission on Tourism, 1997). In addition, sport fishing for various trout species occurs throughout the Lower Truckee River and at Pyramid Lake.

No developed recreation facilities are present in the Project Area. Most of the area is in the Reclamation Zone around Derby Dam and is a security area with no public access allowed. Recreational activities on the Truckee River include hiking, fishing, boating, biking and wildlife watching.

3.15 Air Quality

The Clean Air Act requires the EPA to establish National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. Two types of NAAQS have been established: primary and secondary standards. Primary standards set limits to protect public health, especially that of sensitive populations such as asthmatics, children, and seniors. Secondary standards set limits to protect public welfare, including protections against decreased visibility, damage to animals, crops, and building.

Management of air quality in Nevada is handled by both state and county agencies. The Bureaus of Air Quality Planning (BAQP) and Air Pollution Control, within the NDEP, implement air quality programs for the state, with the exception of Clark (Las Vegas) and Washoe (Reno-Sparks) counties. The Washoe County District Health Department and the Clark County Department of Air Quality Management (AQMD) are responsible for the air pollution control programs and air quality monitoring in those jurisdictions.

Air quality standards have been exceeded in the most populated parts of the air basin - the Truckee Meadows. The cities of Reno, Sparks, and the Nevada side of the Lake Tahoe Basin lie within the Truckee Meadows non-attainment area.

Between 1994 and 2005, the AQMD operated and maintained ambient air monitoring sites in Washoe County measuring carbon monoxide (CO), particulates (PM10, PM2.5), ozone (O3), and nitrogen oxides (NOx). These monitoring stations were sited in accordance with 40 CFR 58 and utilized

monitoring equipment designated as reference or equivalent methods under 40 CFR 53. In addition, Washoe County's CO monitoring network was reviewed annually pursuant to 40 CFR 58.20(d) to ensure the network meets the monitoring objectives defined in 40 CFR 58, Appendix D. The ambient air data were collected and quality assured in accordance with 40 CFR 58 and recorded in the Air Quality System (AQS), formerly referred to as Aerometric Information Retrieval System (AIRS).

Washoe County was taken off the non-attainment list for ozone in 1998 by the U.S. EPA. The Truckee Air Basin, encompassing most of the Reno-Sparks area, occasionally violates federal air quality standards for CO and PM10. Washoe County is considered to be in moderate non-attainment for CO and PM10. The basin's air quality problem is influenced negatively by topography, climate, and traffic volumes (City of Reno, 2000).

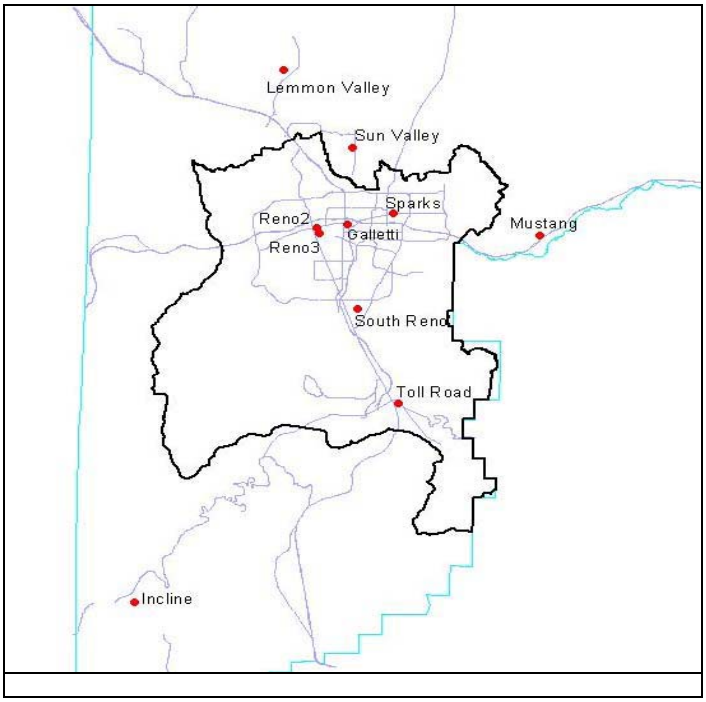


Exhibit 16: The ambient air monitoring sites operated between 1994 and 2005

The Mustang Monitoring site was located closest to the Derby Dam project area, approximately 11.5 miles west. Mustang Special Purpose Monitoring Station (SPMS) was located north of Interstate Highway 80 near the Mustang exit (Exit 23) in south-eastern Washoe County (Exhibit 16). The site monitored CO, O3, and PM10. Ozone and PM10 monitoring commenced at this site in 1993. Carbon monoxide monitoring began two years later in 1995. Carbon monoxide and PM10 monitoring were discontinued in March 1998. Ozone monitoring continued until the site was shut down in March 2002. No exceedance days were reported at this station.

3.16 Geology

The lower course of the Truckee River and Pyramid Lake is in a transitional region, occupying one of the valleys in the Basin Range Province in northwest Nevada. The Basin and Range Province consists of parallel ranges alternating with basin or troughs. The ranges, bounded by faults, have been uplifted relative to adjacent valleys. Igneous, metamorphic and sedimentary rocks are exposed in the ranges.

Geologic evidence indicates that there have been two main deformation episodes in the area – one late Mesozoic age and the other late Tertiary and Quaternary age (USDA, 1990). A layer of Tertiary volcanic and epiclastic rock made from lava flows, breccias, and tuffs covers the Mesozoic age rock. Fluviatile and lacustrine sediments were the first deposits which are made of conglomerate, siltstone, sandstone, and diatomite. The Quaternary deposits were formed from basin sedimentation, which consists of glacial outwash deposits and Truckee River gravel, alluvial fan deposits around the basin, and fine grained flood plain and lake deposits closer to the riverbanks.

The project area is a small valley of the lower Truckee River winding through the middle and is surrounded by hills with steep grades. The project area has the Pah Rah Mountain range to the northwest and the Virginia Mountain range to the south (USDA, 1990). The elevation ranges from

approximately 4,206 ft. msl near the dam structure to approximately 4,204 feet msl near the project's terminus and as a result, the area has nearly a zero percent grade (Google Earth Pro, 2008).

It was during the Wisconsin age, and as recently as 12,500 years ago, that much of the area now contained within the upper Truckee River Basin was covered in snow pack and glaciers, while much of the lower Truckee River Basin was covered by the pre-historic Lake Lahontan. Lake Lahontan, along with Lake Bonneville, which covered northwestern Utah and parts of eastern Nevada, represented the Great Basin's major Ice Age lakes which inundated vast portions of Nevada and Utah. The cooler temperatures and far more abundant precipitation that were prevalent during this period resulted in a more lush and hospitable environment for both flora and fauna throughout this region. Now, only the Great Salt Lake remains as a reminder of the prehistoric presence of Lake Bonneville, and only Pyramid Lake and Walker Lake remain as major lake remnants of Lake Lahontan.

3.16.1 Groundwater

The quality of ground water in Nevada varies greatly because of the various soil and rock types found in the state. Concentrations of dissolved solids generally are higher in the southern part of the state (latitude less than or equal to 38•00'00") than in the northern part (latitude greater than 38•00'00"), similarly to what occurs in surface water. Concentrations in the southern part of the state ranged from 5 to 102,000 mg/L with an average of 1,800 mg/L and a median of 596 mg/L. Concentrations in the northern part of the state ranged from 10 to 94,700 mg/L with an average of 1,310 mg/L and a median of 266 mg/L. The groundwater in the lower Truckee River watershed has naturally high levels of arsenic and other minerals (Lahontan Regional Water Quality Control Board, 2002). Drilling in northwestern Nevada was concentrated in and around the Reno-Lake Tahoe areas; particularly near the communities of Minden-Gardnerville, Fallon, Fernley, and Reno (USGS, 2004).

Wells in the vicinity of the project area are generally constructed for domestic water or irrigation. These wells are typically drilled in sand and boulders (8 to 21 feet below ground (bgs)), sandy clay (21 to 44 feet bgs) and finished in sand (44 to 47 bgs). Static water level of local domestic supply wells is reported at 10 feet bgs.[2]

3.16.2 Fluvial Geomorphic Features

The Lower Truckee River Basin, which encompasses 1,370 square miles, is described by USGS Hydrologic Unit Code (HUC) 16050103. The Basin begins at about Wadsworth and includes a 25-mile-long broad, alluvial valley that stretches to Pyramid Lake. The Lower Truckee River Basin also includes the Pyramid Lake Basin, the Pyramid Lake Paiute Reservation, and to the east over the Lake Range, the Winnemucca (dry) Lake Basin. The installation of Derby Dam on the Lower Truckee River upstream of Pyramid Lake, and the river channelization and removal of streamside vegetation in the early to mid-1900s by USACE have historically affected the river in this area. These effects resulted in increased total dissolved solids (TDS), increased alkalinity due to the loss of inflow, and a loss of habitat, resulting in the depletion of fish species.

Several fluvial geomorphic studies indicate that the reach of the Truckee River below Derby Dam appear to have been relatively geomorphically stable. A 2001 Nevada Department of Transportation (NDOT) report indicates very little lateral migration was experienced from 1965 to 1991. This report also indicates that vertical change in the channel bed was minimal for this reach (NDOT 2001). The Derby Dam itself may be acting as a vertical grade control structure. Details from study and field surveys conducted in February 2006 are provided in the Draft City of Reno Truckee River Below

[2] State of Nevada, State Engineers Office. Well Drillers Report, Riley, Kelly, Derby Dam, Sparks, Nevada. Log No. 9975. March 6, 1968.

Derby Dam Low Flow Channel Development Conceptual Design Report, prepared by HDR Engineering, June 2, 2006.

A hydraulics/geomorphic analysis evaluating the proposed revegetation efforts was not performed because the proposed revegetation efforts are not intended to provide stream bank stabilization.

3.16.3 Soils

The project area is composed of four different soil series as mapped in the south Washoe and Storey County soil surveys (USDA, 1983; USDA, 1990):

- Sagouspe, sandy loam 0 to 2 percent slopes, occasionally flooded
- Sagouspe, variant loamy very fine sand
- Sagouspe, variant loamy very fine sand, wet
- Rose Creek loamy fine sand, drained

The Sagouspe series consists of very deep, somewhat poorly drained soils on floodplains and low terraces. Sagouspe Variant loamy very fine sand is also very deep, poorly drained soil found on flood plains and lake terraces. These soils formed in alluvium derived from mixed rock sources. Slopes are 0 to 2 percent. Elevation ranges from 5,000 to 5,100 feet mean sea level (msl).

Typically the surface layer is dark grey loamy, very fine sand about 5 inches thick. The upper 17 inches of the underlying material is light brown sand with many yellowish red mottles. The lower part to a depth of 60 inches is light greenish gray, stratified sand and silt loam. Permeability of the Sagouspe variant soil is moderate. Available water capacity is moderate. Effective rooting depth is 60 inches for water-tolerant plants, but is limited to 20 to 36 inches for water sensitive plants. Runoff is slow, and the hazard of water erosion is slight. The hazard of soil blowing is moderate. A seasonal high water table is at a depth of 20 to 36 inches in winter, spring and early summer. Sagouspe Variant loamy very fine sand wet soil is very deep, poorly drained soil with a similar composition.

Rose Creek loamy fine sand, drained is a very deep, poorly drained soil on floodplains. Drainage has been altered. This soil is formed in alluvium derived from mixed rock soils. Typically the surface layer is grayish brown loamy fine sand about 15 inches thick. The underlying material to a depth of 60 inches is light brownish gray stratified, very fine sandy loam through gravelly loamy sand. Effective rooting depth is 60 inches for water-tolerant plants, but is limited to 20 to 36 inches for water sensitive plants. This soil is subject to flooding during storms of prolonged high intensity.

A soils map of the Derby Dam project area is provided as Exhibits 17 and 18. Estimates of the acreage of each soil series present in the project area are included.

SOIL SURVEY OF STOREY COUNTY AREA, NEVADA; WASHOE COUNTY, NEVADA, SOUTH PART

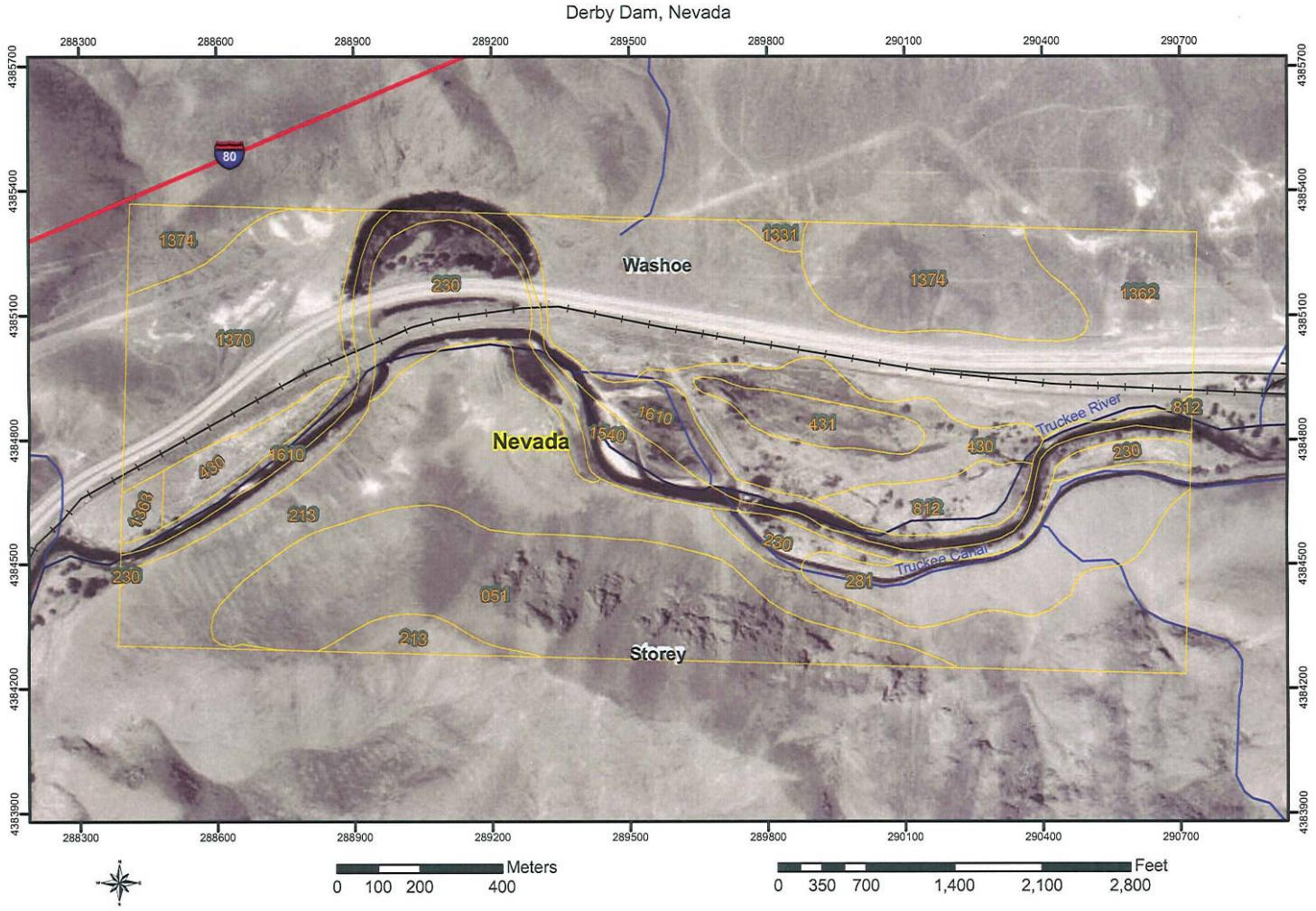


Exhibit 17: Soil Survey

Exhibit 18: Soil Survey – Unit Descriptions

Map Unit Legend Summary

Storey County Area, Nevada

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
051	Old Camp-Hefed-Rock outcrop association	93.2	13.7
213	Theon-Old Camp association	132.3	19.4
230	Sagouspe sandy loam, 0 to 2 percent slopes, occasionally flooded	42.6	6.3
281	Perazzo very stony sandy loam, 4 to 15 percent slopes	38.0	5.6
1540	Water	36.8	5.4

Washoe County, Nevada, South Part

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
430	Sagouspe variant loamy very fine sand	43.2	6.3
431	Sagouspe variant loamy very fine sand, wet	11.9	1.7
812	Rose Creek loamy fine sand, drained	14.8	2.2
1331	Sutcliff-Bundorf-Kleinbush association	1.9	0.3
1362	Trocken-Badland complex, 4 to 15 percent slopes	118.6	17.4
1363	Trocken very stony sandy loam, 4 to 8 percent slopes	3.3	0.5
1370	Singatse-Fireball-Rednik association	61.0	9.0
1374	Singatse-Fireball-Osobb associaton	49.5	7.3
1610	Water	33.5	4.9

3.17 Hazardous, Materials

A preliminary inquiry to identify sites where hazardous materials are managed was conducted for the proposed project area. HDR subcontracted Environmental Data Resources, Inc. of Southport, CT (EDR) to perform an environmental records search of federal, state, and local files for sites located within the study area. American Society for Testing and Materials (ASTM) guidance defines specific radii of concern for different databases, ranging up to a distance of one mile from the specific target property boundaries. The EDR report was received by HDR on July 2, 2007.

The EDR records search report results, a full list of the databases searched and their respective radii, as well as acronyms for the various databases and regulatory agencies. The EDR database report is 45 pages long, and lists no sites within the specified EDR study area. A call to Evan Chambers at Nevada Department of Environmental Protection and a check of the U.S. EPA's environmental compliance -- ECHO database (www.EPA.gov/echo) confirmed that no facilities managing hazardous materials are within the specified study area (Chambers, 2007).

The EDR report also includes "Orphan" sites, or sites with insufficient address information for mapping. The report does list 21 sites in its Orphan Summary. HDR reviewed all orphan sites and determined that none of these sites are within the study area, nor do they pose a significant threat of contamination migration to the study area.

Two mine locations in Storey County are within 10 miles of the project area, south of Derby Diversion Dam (Exhibit 19). The Clark Operation, operated by Eagle-Pitcher Minerals, Inc. is a diatomite mine employing about 50 people. The mine is approximately 3.5 miles southwest of the Derby Dam diversion. Diatomite is a soft, chalky deposit composed entirely of the fossilized remains of tiny algae that inhabited a prehistoric lake about 6 to 9 million years ago. The second mine is the Gooseberry Mine, operated by Asamera Minerals (U.S.) Inc. This mine produces both silver (353, 503 ounces) and gold (8,011 ounces). Gooseberry Mine is approximately 7.6 miles south of the Derby Dam diversion (Nevada Department of Minerals, 1990).

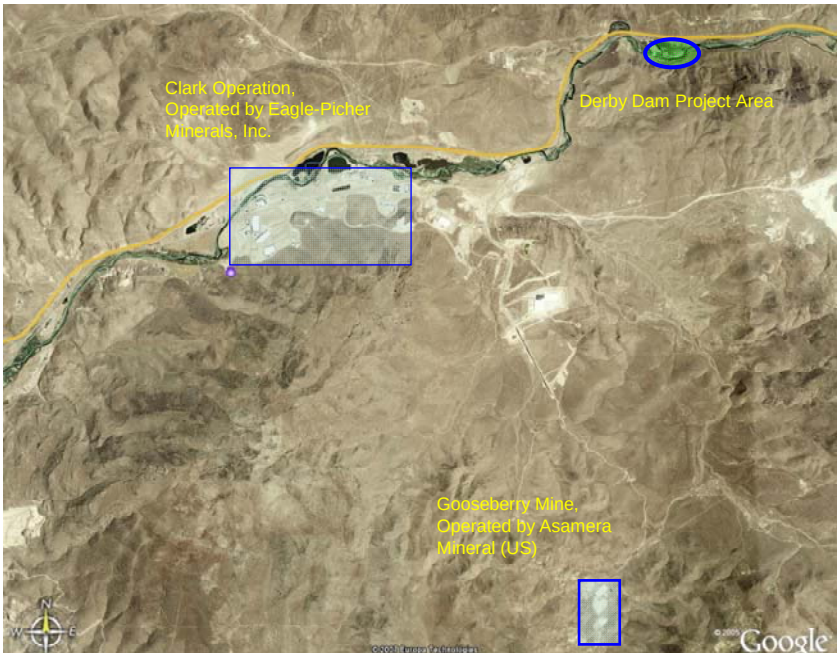


Exhibit 19: The relative location of mines in Storey County to the Derby Dam project site (Google Earth Pro, 2008).

4 ENVIRONMENTAL CONSEQUENCES

4.1 Introduction

The Cities and Reclamation have used a scientific and analytical evaluation to compare the No Action and the Proposed Action Alternative. This section of the EA evaluates direct, indirect, and cumulative effects for all resources described in Chapter 3, Affected Environment.

4.2 Water Resources

4.2.1 No action

Under the No Action Alternative there would be no change in the amount or duration of flow in the river. Water resources just below the Derby Dam would remain the same.

4.2.2 Proposed Action

The proposed action would have no long-term effects on the amount or duration of flows in the river. The use of the small amount of water for irrigation purposes to establish the revegetated areas for approximately three years would have no impacts on amount or duration of flow during this period.

4.3 Water Quality

4.3.1 No Action

Under the No Action Alternative, water quality in the river would continue to experience wide fluctuations of seasonal temperature change and a general degradation of chemical and biological parameters (e.g., dissolved oxygen, biological oxygen demand, temperature and temperature fluctuations,) making it unsuitable for resident and migratory fish species.

4.3.2 Proposed Action

During implementation of the proposed action, best management practices (BMPs) would be used to avoid or reduce to a reasonable level any short-term effects on water quality at equipment/material staging areas and along temporary roadways. Additional storm water BMPs would be designed to limit sediment losses to the river as a result of stream bank revegetation efforts. Best management practices could include, but not be limited to, installation of silt fence, wattles and compost filter socks, straw bales, or application of surface mulching. Restoration of the riparian habitat along the banks of the river would create more shaded areas and lower water temperatures, as well as reduce erosion of the riverbanks and consequently reduce the amount of total sediment entering the river. These improved water quality conditions will, ultimately, contribute to improving the overall quality of aquatic habitat for fish and other water dependent organisms.

Herbicide use during restoration activities could affect water quality from overspray or spills, however proper protocols will be implemented and no water contamination is expected. Certified applicators, proper equipment storage areas set back from the river and other BMPs will be implemented to protect water quality.

4.4 Vegetation Communities

4.4.1 No Action

Under the No Action Alternative, tall whitetop would continue to proliferate encroaching on native vegetation and ultimately decreasing the quality of habitat in the area

4.4.2 Proposed Action

Under the Proposed Action non-native plant species (i.e., tall whitetop) will be removed and native riparian and upland vegetation will be planted in the project area. This action will increase plant diversity in the area.

Approximately 3.1 acres of riparian vegetation will be planted including Woods rose, buffaloberry and golden currant; cottonwood pole plantings will be utilized in other areas; willow will be planted along river banks, and native upland vegetation will be seeded to reestablish the native vegetation communities in the area. These efforts will provide a positive impact in the area by establishing a mosaic of habitats in the area.

The estimated time for new planting to become established is three growing seasons. Limited irrigation may be required for initial establishment but no long term irrigation is anticipated. Monitoring of plant survival, vigor, and reproductive success and water quality will be necessary for permitting requirements. Monitoring and control of tall whitetop would also be critical to the success of the proposed action. This type of monitoring would take place three times per growing season, at a minimum. Monitoring would be conducted for a minimum of three years after the project is completed.

4.5 Noxious Weeds

4.5.1 No Action

Under the No Action Alternative, invasive species of noxious weeds growing in the upland areas of the project site would not be controlled. Currently, a band of upland vegetation of varying width parallels to the north. These niches normally provide important habitat and a movement/migration corridor for many wildlife species that reside or seasonally use the Truckee River corridor to meet their life history needs (food and water, cover, and areas for breeding, rearing of young, resting or hiding). Tall whitetop extends from the upland vegetation to the toe of alluvial slopes. The existing conditions promulgate the extensive encroachment of tall whitetop onto the existing floodplain or into the transitional zone between the riparian and terrestrial areas. This encroachment of tall whitetop limits the viability of niche habitats for riparian and upland wildlife species in the area.

4.5.2 Proposed Action

Monitoring and control of tall whitetop would be critical to the success of the proposed alternative. In locations along the Truckee River, it has proven very difficult to control this invasive species. Timing of noxious weed control is also a critical factor in limiting its spread. Tall whitetop must be controlled prior to temporary roadway grading to limit its spread into other areas (City of Reno, 2006).

Fall treatments would include removal of dead stalks to make treatment easier in the spring. Brush blades would be used as low on the plants as possible (with as clean a cut as possible), but root stock would not be disturbed to avoid spreading of the species. Spring and summer treatments can include mowing of the control areas prior to full flowering (Tall whitetop can flower as much as three times per season). For control purposes, it is important to not let the plant set seed. When plants re-flower,

and prior to the second peak flowering, plants can be cut as close to the ground as possible, and a concentrated solution of Telar can be applied to the area with a wick applicator. Alternatively, cutting blades can be coated with the herbicide prior to treatment

Herbicides may damage the soil by inhibiting the formation of essential mycorrhizal colonies, disrupting the processes of nitrogen fixation and nutrient recycling, thus hindering the establishment of many native riparian plants. An aquatic herbicide approved for use by the river will be used and all label requirements will be complied with and no impacts to the river are expected as a result. Many wetland wildlife species are sensitive to herbicides. Native species may be killed by herbicide application if over-spraying or mis-spraying occurs or if the native plants are mixed with non-native plants selected for spraying. However, proper spraying protocols and BMPs will be used and impacts are expected to be minor.

4.6 Wildlife

4.6.1 No Action

Under the No Action Alternative, the quality of wildlife habitat would continue to decline along the lower Truckee River resulting in a decrease in wildlife diversity.

4.6.2 Proposed Action

Implementation of the proposed action may have long-term beneficial effects on vegetation and wildlife in the project area. The project will expand and enhance natural vegetation communities by creating several diverse canopy layers. These layers may provide appropriate habitat for many native bird, mammal, reptile, and amphibian species that are dependent on native riverine, wetland and upland environments. Taller canopy layers, once establish, will provide shaded areas with lower water temperatures within the project area. These shaded areas will help lower water temperatures in the project area, thus improving the quality of fish habitat.

No beneficial effects for the bald eagle would result from the project due to the limited amount of resources being constructed to improve fisheries. However, improvements to the river habitat that increase fishery populations of trout and other species in combination with improvements to riparian vegetation that could provide a multi-storied forest canopy near bodies of water could increase the potential for bald eagle reappearance.

4.7 Threatened and Endangered Species, Species of Concern, Other Special Status Species

4.7.1 No Action

Under the No Action Alternative, a minor amount of riparian habitat in the range of the two federally listed species in the lower Truckee River would continue to decline. This would occur as riparian vegetation continues to diminish, water quality degrades, and water temperatures increase. Overall, wetland, riparian and upland habitat quality would continue to decrease, negatively affecting a number of state and federal species of concern.

4.7.2 Proposed Action

Threatened and Endangered Species

The proposed alternative would have long-term beneficial effects on Lahonton Cutthroat Trout (Threatened) and Cui-ui (Endangered). This alternative involves revegetation and restoration of

riparian habitat that will create shade and may lower water temperatures. Both of these effects could have a beneficial effect on fisheries

In the short-term, fisheries could be adversely affected during the revegetation phases for approximately 5 months. However, BMPs will minimize impacts to the river. This alternative would create approximately 2.5 acres of riparian vegetation enhancements. Some increase in the food source for macro-invertebrates could occur in the form of leaf biomass from the riparian vegetation. This in turn, could provide an increase in macro-invertebrate populations, which would provide more food source in the river than in existing conditions.

Species of Concern

The proposed alternative would have beneficial effects on species of concern in the project area. As previously mentioned, the proposed action will enhance fish habitat in the project area, thus, benefiting fish such as rainbow and brown trout that are considered state species of concern. Additionally, the multi-layered riparian, wetland and upland vegetation may benefit a number of avian species of concern that have the potential to be present in the project area such as bald eagle and tri-colored blackbird. Increasing the quality of riparian, wetland and upland vegetation will most likely benefit a wide range of neotropical migrants, many of which are identified as species of concern. Mammals such as otters and bats may benefit from the reintroduction and enhancement of natural vegetation.

Short-term negative effects are possible for species of concern due to construction activity in the area. Impacts could include temporary disturbance to habitat and or temporary displacement or animals. These impacts are expected to be minor due to current poor quality of habitat and limited likelihood of the species being present. These effects will be minimized with BMPs.

4.8 Cultural Resources

One historic cultural resource, a remnant of early railroad and/or road construction along the Truckee River, was identified during the archaeological survey. This cultural resource is outside of the area of potential affect, adjacent to the project area. Derby Diversion Dam and the Truckee Canal are adjacent to the project site. Derby Diversion Dam was listed on the NRHP in 1978, and the Truckee Canal has been determined eligible for listing on the NRHP as a contributing element of the Newlands Project (consensus determination January 10, 2008).

4.8.1 No Action

Under the No Action alternative, any cultural landscapes and historical and archaeological properties would remain in their similar state and would not be adversely affected. However, over time natural processes such as erosion, root and rodent intrusion, and flooding may occur causing damage to historic properties.

4.8.2 Proposed Action

The proposed action will not impact the one identified historic cultural resource. Physical restoration activities are limited to the river banks and the site is outside of the project area. The historic properties, Derby Diversion Dam and the Truckee Canal, located adjacent to the project site will not be impacted by the project. Since the project will help restore the natural riparian vegetation along the river that likely existed at their time of construction, there will be no visual impacts to the nearby sites of Derby Dam and the Truckee Canal.

The Nevada State Historic Preservation Office (SHPO) concurs with Reclamation's finding of no effect to historic properties and that Reclamation has completed its consultation with SHPO under Section 106 of the National Historic Preservation Act

In the unlikely event that any cultural or human remains be encountered during project implementation, all work in the area of the find will halt and the Bureau of Reclamation's Regional Archeologist will be notified immediately. If cultural resources are determined to be historic properties pursuant to 36 CFR Part 60, Reclamation will continue consultation pursuant to 36 CFR Part 800.13(b) in order to avoid, minimize, or mitigate any adverse affects to such properties. If human remains are discovered, or a cultural resource is determined by Reclamation to be a Native American cultural item, those remains and/or items will be treated according to the provisions set forth by the Native American Graves Protection and Repatriation Act (NAGPRA). The project will not resume until Reclamation provides a written notice to proceed.

4.9 Indian Trust Assets

No known Indian Trust Asset negative issues are associated with the proposed action. The project is designed to benefit riparian habitat along the lower Truckee River and fish species of both Pyramid Lake and the lower Truckee River. The proposed alternative is anticipated to have a beneficial impact for this Indian Trust Asset. The project would assist in improving water quality and enhance the riparian canopy in and stabilize this portion of the lower Truckee River and enhance river habitat for Pyramid Lake fishes.

4.10 Socioeconomics

No disproportionate effects are projected on any particular group of individuals predicted under any of the alternatives. The project would provide some local labor income during implementation of the revegetation work.

4.11 Environmental Justice

No negative effects would occur under either the No Action Alternative or the Proposed Action Alternative since no minority and/or low-income populations or communities would be affected by the project. Additionally, no minority populations are present within the proposed project area and the population distribution would not change relative to existing conditions. The Proposed Action would be beneficial to several tribal interests of the Pyramid Lake Paiute Tribe, including improvements in water quality and quantity and improved fisheries habitat in the river.

4.12 Land Use

4.12.1 No Action

Under the No Action Alternative, land use would not change from the current Open Land use designation of the project area.

4.12.2 Proposed Action

Under the Proposed Action, land use would continue to be Open Land use. The Proposed Action is consistent with land use management guidelines for these lands for both Counties and the Bureau of Reclamation.

4.13 Land Ownership

Land ownership would not change within the project area under either the No Action Alternative or the Proposed Action Alternative.

4.14 Recreation

4.14.1 No Action

Due to steep terrain, fencing and limited access, no existing recreational facilities are located below Derby Dam. Recreational opportunities are also limited due to the sparse desert vegetation, limited access to the river and lack of recreational facilities in the area. Therefore, there would be no impact to recreation under the No Action Alternative.

4.14.2 Proposed Action

Upon completion of the proposed riparian ecosystem restoration project, passive recreational activities are possible, such as hiking, fishing, photography and nature study, but are limited due to limited access and security fencing of most of the area. The proposed project would have no significant adverse effects on recreation, but may have incidental benefits on recreation by providing improved conditions for opportunities for passive recreation in the area and improved fisheries habitat.

4.15 Climate and Air Quality

4.15.1 No Action

Under the No Action Alternative, air quality conditions are expected to remain unchanged or to slightly decline over time.

4.15.2 Proposed Action

Under the Proposed Action Alternative, air quality would be temporarily affected during the earthwork and temporary road grading because of exhaust and dust that would be released from equipment and vehicles. The operation of equipment during this time could cause a slight increase in the amount of PM10, reactive organic gasses (ROG), CO. nitrogen oxides, and sulfides (SOx). The amount of pollution and dust released from the construction activity would be expected to disperse as it leaves the area. The distance the dust and pollution would travel before dispersing would be influenced by the prevailing wind, temperature, other weather conditions, and the amount of equipment in operation. It is expected that air quality would return to pre-construction conditions after project implementation has been completed.

Emissions associated with the proposed action are primarily construction related. Emissions include exhaust from equipment, worker's personal vehicles, and fugitive dust created during earthwork. This project would disturb more than 5 acres; therefore an air quality permit would be required. Additionally, best practical measures would be implemented in accordance with Washoe Country rule 040.030 to control fugitive dust. Construction mitigation would include strategies that reduce engine activity of construction equipment.

4.16 Geology (Including Soils, Groundwater, and Fluvial Geomorphology)

4.16.1 No Action

Under the No Action Alternative, no change in existing soil conditions, groundwater or fluvial geomorphology would occur.

4.16.2 Proposed Action

Under the Proposed Action minor temporary effects from earthwork and revegetation work are anticipated, including possible compaction of soil from tracked vehicle operation during grading of channel banks. Temporary effects could include localized soil compaction and sediment loss to the river. Implementation of Best Management Practices prior to the onset and during the work would minimize impacts to soils.

The Proposed Action would have no impact on geology or groundwater because conditions would not change relative to existing conditions.

The Proposed Action would have no effects on the fluvial geomorphology because revegetation of the stream banks would not alter river flows.

4.17 Hazardous Materials

4.17.1 No Action

No issues with respect to hazardous materials management would occur under the No Action Alternative because hazardous materials are currently not managed within the project corridor below Derby Dam.

4.17.2 Proposed Action

Under the Proposed Action, the management of hazardous materials would be strictly limited on-site by only allowing construction equipment to be fueled either at an off-site location or in a designated fueling area that provides secondary containment for spills of petroleum products. All fueling would occur away from the river and the riparian environment to protect these environments against accidental spills. No aboveground or underground storage tanks would be utilized for on-site fueling of construction equipment of the Proposed Action. All fueling of construction equipment would occur from fueling vehicles designed and operated by licensed fuel contractor.

4.18 Irreversible and Irretrievable Commitment of Resources

There are no irreversible or irretrievable commitment of resources associated with the Project.

4.19 Cumulative Effects

NEPA defines a cumulative effect as the:

> Impact on the on the environment which results from incremental impact of the action when added to other past, present, or reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually, minor but collectively significant actions taking place over a period of time [40 CFR §1508.7].

Currently, few projects are identified as likely to occur in the immediate area of the proposed project. However, Reclamation and other agencies are proposing significant activities along the upper reaches of the Truckee River for ecosystem restoration and major flood damage minimization activities. Ecosystem restoration activities include bank stabilization, placing meanders in channelized sections of the river, and reestablishment of riparian vegetation along the river. Generally, these activities are expected to benefit the environmental resources in the region and would be cumulatively beneficial to the riverine ecosystem combined with the Derby Dam project.

Water resource planning projects along the Truckee River have been in existence since the early 20th century. Agency and public participation regarding restoration of the lower Truckee River have been on-going for decades. Early projects constructed water diversions and channeled supplies for irrigation and agricultural purposes; however, inefficient operations and water shortages was a significant impediment to successful farming in the region. Other projects focused on flood management, resulting in further degradation of the channel and water quality, wetlands, and riparian habitats. Current and proposed future projects are focusing on improving water quality, restoring and protecting the biological resources and habitat along the river. Regional Activities considered for cumulative effects are listed in 4.20 below.

Preliminary flood control measures being proposed include a variety of activities including levees, bank stabilization, storm drain realignments, and similar activities. These activities are being evaluated in other NEPA documents being developed by Reclamation and the Corps of Engineers. The planned activities are distant from the proposed Derby Dam project, so should have no direct cumulative impacts.

The proposed action could contribute to adverse air quality during implementation of the project, however this would be short term and air quality standards would not be violated and no sensitive receptors would be exposed to significant levels of pollutants. Mitigation measures will minimize air quality emissions during construction activities, and therefore, cumulative impacts are considered less than significant.

Water quality could be adversely affected by the revegetation efforts. Any increases in sediment levels are anticipated to return to pre-existing conditions once the work is complete. BMPs and mitigation measures are incorporated into the proposed restoration design to minimize surface water contact with exposed cuts and fills, and reduce associated impacts. The Proposed Action would ultimately create long-term benefits associated with water quality, and therefore, cumulative impacts are considered less than significant.

The Proposed Action could generate short-term adverse effects on existing vegetation and wildlife resources in the project area. The potential effects of rehabilitation activities on wildlife habitat may displace or disturb individual resident and migratory wildlife; however, any movement of wildlife away from the project area is expected to return following construction activities. Mitigation measures are in place to minimize adverse effects on existing vegetation and wildlife and special status wildlife species, and therefore, cumulative impacts are considered less than significant.

The Proposed Action in conjunction with reasonably foreseeable future projects would restore the environmental conditions along the river, and provide benefits related to water quality, biological productivity and diversity, and invasive weed eradication.

4.20 Regional Setting and Related Projects List

As described in earlier chapters of this document, the Truckee River Basin is managed and regulated by a variety of federal and state agencies. Regulation is established primarily through formal operating agreements and strict operational requirements for controlled reservoir releases. The purposes of regulation are to maintain long-standing water rights and to ensure water supply for municipal, industrial, agricultural, and environmental uses. Increased visitation and growth in the Truckee River Basin have fueled the need for new development and infrastructure that could adversely affect the Truckee River.

The projects listed in this analysis were selected for their potential to cause direct physical changes in the Truckee River from Lake Tahoe to Pyramid Lake. Because water is diverted from the river to reservoirs outside of the Truckee River's watershed boundaries, it is possible that projects occurring in neighboring watersheds could contribute to cumulative impacts. These projects were included if they

met the criteria listed above. Projects included in this list have been organized into the following three general categories:

- water supply and flood control projects
- habitat improvement and fish passage projects
- utility and infrastructure projects

4.20.1 Water Supply and Flood Control Projects

4.20.1.1 Truckee River Operating Agreement

The TROA is intended to provide a more flexible basin-wide approach to operating reservoirs and managing water releases in the Truckee River watershed. Public Law (P.L.)101–618 directs the Secretary of the Interior (Secretary) to negotiate an operating agreement with the States of Nevada and California after consultation with other parties designated by the Secretary or the States. The TROA has been signed by the Secretary, the States, SPPC, and the Pyramid Lake Paiute Tribe, among others.

The Final Environmental Impact Statement/Environmental Impact Report was released in January, 2008. The primary purpose of the proposed action in TROA is to implement section 205(a) of P.L. 101-618, which directs the Secretary to negotiate an agreement with California and Nevada to increase the operational flexibility and efficiency of certain reservoirs in the Lake Tahoe and Truckee River basins. The proposed action would provide additional opportunities to store water in existing reservoirs for future manufacturing and industrial demands during periods of drought conditions in Truckee Meadows, and enhance spawning flows in the lower Truckee River for the benefit of Pyramid Lake fishes (i.e., federally endangered cui-ui and threatened LCT). In addition, it would satisfy all applicable dam safety and flood control requirements and ensure that water is stored in and released from Truckee River reservoirs to satisfy the exercise of *Orr Ditch* and *Truckee River General Electric* decree water rights and minimize the Secretary's costs associated with operating and maintaining Stampede Reservoir. It would also increase recreational opportunities in the Federal reservoirs, improve streamflows and fish habitat throughout the Truckee River basin, and improve water quality in the Truckee River (Reclamation, 2008).

4.20.1.2 Water Quality Settlement Agreement

The Water Quality Settlement Agreement provides for the purchase of water rights on the lower Truckee River and for the Newlands Project in an attempt to resolve major water quality and aquatic resource problems. The parties involved in the agreement are the Cities of Reno and Sparks, the Washoe County Water Conservation District, the Pyramid Lake Paiute Indian Tribe, the U.S. Department of the Interior, the U.S. Department of Justice, EPA, and the Nevada Division of Environmental Protection. The local governments of Reno, Sparks, and Washoe County have agreed to provide $12 million for the purchase of downstream water rights. The U.S. Department of Interior in turn has agreed to match this amount with federal funds. The water purchased would be used to dilute treated effluent discharges, which in turn would improve water quality and provide more water for Pyramid Lake. All water associated with this program will be stored in federally managed reservoirs and released according to agreed schedules and management procedures implemented as part of the TROA. The intent is to augment river flow during a 3-month period from August to October when Truckee River water is being diverted at Derby Diversion Dam to the Truckee Canal in accordance with OCAP (Reclamation, 2008).

4.20.1.3 TRUCKEE MEADOWS FLOOD CONTROL PROJECT

USACE is currently proposing a project to provide increased flood control protection on the Truckee River. The primary study area for this project includes the Truckee River in Washoe County, Nevada, at and below Reno, Sparks, and the Truckee Meadows. A tentative flood control plan consists of storage facilities on the Truckee River at Verdi, interceptor facilities on Steamboat Creek, and channel improvements in the Truckee Meadows area. Specific flood control measures would include the construction of floodwalls and levees to confine the flow of the river as well as the construction of a detention basin near University Farms, southeast of Reno, Nevada (USACE, 2003). The project's status is currently in the feasibility and "citizen review" stage of the USACE project development process.

The Truckee Meadows Flood Control project is a multi-purpose study by USACE that is evaluating opportunities for reducing flood damages, and providing ecosystem restoration along the Truckee River from the Reno-Sparks metropolitan area to its terminus at Pyramid Lake. The Truckee Meadows Project (if approved for construction) would construct setback levees and floodwalls to provide flood damage reduction protection, replacement of five bridges, flood protection for downtown Reno, and restoration of the environment along the Truckee River.

USACE-led construction projects would not likely start any sooner then one year following congressional authorization of the project. Construction would be completed in multiple stages and would likely require 5 to 10 years to fully complete. Congress must fund the start, continuation and completion of the construction phase. Congress' allocation of funds is therefore critical to timely completion of the construction phase (USACE, 2006).

This project would have no adverse cumulative effects on land use, recreation, socio-economics, noise, air quality, or cultural resources. The Truckee Meadows Project would provide wildlife and aquatic species with additional resources for foraging, spawning, nesting, and resting within the Truckee River Watershed. The proposed project would result in cumulative beneficial effects on vegetation, wildlife, fisheries, special status species, water quality and esthetics (TNC, 2005).

4.20.1.4 TRUCKEE RIVER AND TRIBUTARIES PROJECT

Historic projects such as the Truckee River and Tributaries Project modified the river channel by making the river wider and straighter, constructed setback levels, floodwalls, and detention basins. The project started in 1954, and was finished in 1968. Truckee River and Tributaries resulted in river incision, accelerated bank erosion, the loss of wildlife population and diversity and the loss of riparian habitat along the river and some of its tributaries.

4.20.2 Habitat Improvement and Fish Passage Projects

4.20.2.1 OTHER HABITAT IMPROVEMENT PROJECTS

The following site-specific restoration projects have been identified:

- The (proposed) Truckee Meadows Flood Control Ecosystem Restoration Project (Truckee Meadows Project)
- The Nature Conservancy is restoring river channels and wetlands on purchased lands, such as the completed McCarran Ranch-Truckee River Section 1135 Project
- The completed KMEP Pipeline Easement Renewal Project
- Washoe-Storey Conservation District's Steamboat Creek Restoration Plan proposes to restore up to 2.2 miles of Steamboat Creek

- Recreation areas managed by California Department of Parks and Recreation (such as Tahoe State Recreation Area) are restoring native vegetation, removing non-native plants, and implementing BMPs to control erosion
- The Pyramid Tribe and FWS are cooperating on a program to reestablish cottonwoods and the riparian canopy along the lower Truckee River

The water supply and flood control projects listed above are designed to improve the reliability and certainty of Truckee River flows for a broad range of interests, including agricultural, municipal, industrial, recreational, and environmental interests. The cumulative net effect resulting from these projects is anticipated to be positive. However, these projects may result in some negative impacts, including localized changes in water temperature, recreation impacts, or changes in water supply availability or reliability as described below in the cumulative impact analysis for the project alternatives.

Habitat improvement and fish passage projects, as well as utility and infrastructure projects, are generally designed to improve fish passage, restore ecosystem components, or improve existing transportation and utility networks throughout the region. Although these projects could result in temporary impacts, such as increased sedimentation caused by construction, they are expected to be beneficial over the long term. The projects are designed to provide wildlife and aquatic species with additional resources for foraging, nesting, resting/protective cover, and rearing. The proposed action would improve the quality of fish habitat and water quality. The project would also potentially provide the public with additional recreational activities and improve socio-economic and aesthetic resources of the area.

As planned, the Proposed Action would positively affect approximately 2.5 acres of riparian habitat. Once established, the additional acres of riparian habitat should slowly expand, thus increasing the effects of shading on the river channel and extending the amount of channel that is shaded. With an aggressive approach to invasive and noxious weed species control over a period of two to three growing seasons, riparian habitats can be expected to expand much more rapidly along the active stream channel. Restoration of riparian habitat and bank stabilization should reduce erosion of the riverbanks which could reduce the amount of total suspended solids (TSS) entering the Truckee River. Lower concentrations of TSS should improve the aquatic habitat by allowing more DO saturation in the water (whereas high concentrations of TSS in the water typically slow down plant photosynthesis). This should result in lower amounts of oxygen being released into the water (TNC, 2005).

Derby Dam Fish Passage Facility

The Truckee-Carson Diversion Dam (Derby Dam), constructed in 1905, is located on the lower Truckee River, approximately 11 miles above Wadsworth in Washoe County, Nevada. The dam is a key component of the Newlands Project, diverting water into the Truckee Canal for irrigation and storage.

Derby Dam has been modified by Reclamation to include a new rock channel fishway (a fish ladder was constructed in 1908; it had minimal success for fish passage and was removed). The rock channel fishway was completed in October, 2003 to provide fish passage past Derby Dam, its construction was intended to allow the passage of the threatened Lahontan cutthroat trout and the endangered cui-ui as well as resident fish species. This fishway operated between January and March, 2003. It was closed in June, 2003 and has not yet been reopened.

Funding has been provided in a 2008 earmark for the addition of a fish screen for the Truckee Canal.

An operating fish passage would benefit resident and migratory fish and assist in recovery of cui-ui and LCT, which would provide cultural and economic benefits to the Pyramid Tribe.

4.20.3 Water Treatment Plants

The following water treatment plant actions have been proposed:

- Washoe County proposes to construct a potable water treatment plant to treat water from Galena, Whites, Steamboat, and Thomas Creeks. The total peak capacity at build-out would be 12 million gallons per day. Maximum withdrawal in any given year would be 7,600 acre-feet. This project would treat groundwater that does not currently meet drinking water standards.
- Truckee Meadows Water Reclamation Facility is expanding its treatment capacity to 51.2 million gallons per day to meet planned treatment demand for the region.
- The Pyramid Tribe is planning to develop a consolidated wastewater system for Nixon.
- Washoe County and the Pyramid Tribe propose to construct a wastewater treatment plant and sewer collection system to serve both private and Tribal areas of Wadsworth, Nevada.

These activities may potentially improve river water quality by reducing biological and chemical oxygen demand in the treated water. Coordinated with TROA operations, releases of treated wastewater could enhance seasonal water quality through management of dedicated Credit Water releases.

Exhibit 20 summarizes the net cumulative effect(s) with respect to water quality, Threatened and Endangered Species, and Native Vegetation – considered to be the three most important and potentially affected resources for the Proposed Action.

Exhibit 20: Summary of Effects of Past Truckee River Water Resources Projects and the Proposed Action.

Project or Proposed Action	Threatened & Endangered Species	Water Quantity and Quality	Native Vegetation
Truckee River Operating Agreement	Positive Effect	Positive Effect	Positive Effect
Nevada Assembly Bill 380	Positive Effect	Positive Effect	No Effect
Truckee River and Tributaries Project (1954)	Negative Effect	Negative Effect	Negative Effect
Truckee Meadows Project	Positive Effect	Positive Effect	Positive Effect
McCarran Ranch-Truckee River Section 1135 Project	Positive Effects	Positive Effects	Positive Effects

4.21 Regulatory Issues of the Proposed Action

During implementation of the riparian ecosystem enhancements care would be taken to minimize erosion and the movement of sediment off-site. Prior to rehabilitation efforts, all environmental

protection measures as expressed by contract clauses, design drawings, or other means would be reviewed with the contractor at a pre-construction conference. Excavated material would be hauled off-site and disposed of at an approved landfill. Limited amounts of topsoil will be stockpiled for a short duration and replaced to support plant establishment. Storm water pollution prevention BMPs would be installed throughout the project area in accordance with an approved NPDES Storm Water Pollution Prevention Plan (SWPPP).

All construction/earthwork activities in and around streams would be in compliance with applicable federal, state and local regulations. The following permits may be required for this project.

Washoe and/or Storey County, Nevada: The project site lies on both Washoe and Storey Counties land. Both counties would likely need to issue grading, dust control and vector control permits. Washoe County would require a Storm Water Pollution Prevention Plan (SWPPP) for any disturbance greater than an acre or any sensitive areas. Additionally Washoe County provides local inspection and purview for such project; Washoe County Engineering would also charge $60/acre to perform required storm water compliance inspections. Washoe County Building and Safety would also require grading permits based on the number of cubic yards of material moved. It is anticipated that a special use permit would be required from Storey County, the cost of which may be $3,000.00.

Nevada Department of Environmental Protection: A permit called "Temporary Permit for Working in Waterways (i.e., the Rolling Stock Permit) may be needed for this project. This permit may be issued for a maximum of 180 days. The cost of this permit is $250.00. State of Nevada Division of Water Resources may require permits for land and/or water encroachment and may require a temporary permit for working waterway (formerly known as “rolling stock” permit).

Environmental Protection Agency (EPA): Requires a §401 Water Quality Permit. This is handled by the NDEP except for tribal lands.

U.S. Army Corps of Engineers: Clean Water Act §404 Permit. This federal permit allows for dredge or fill of existing wetland areas or waters of the United States, which includes the Truckee River and adjacent wetlands. This permit would be free to the City of Reno and would likely take 1-3 months to obtain. A Nationwide Permit (NWP) is available for Wetland and Riparian Restoration and Creation Activities (NWP Number 27).

4.22 Issues Related to Work Performed on Union Pacific Railroad Property

Union Pacific Railroad requires both Beautification and Temporary Use of Railroad Property Permits for entry, access, improvement, and use of its railroad properties and for work in the railroad right-of-way. A Beautification Permit is required for the right to clear, improve and maintain the railroad properties. Although the Truckee River Channel is not on railroad property, specific areas designated as Staging Areas for construction equipment and materials, as well as temporary road access to revegetation and invasive species control sites are.

5 ENVIRONMENTAL COMMITMENTS

Reclamation and the Cites would be responsible for the successful implementation of all environmental commitments. Compliance with the Clean Water Act is required for work within the Truckee River or adjacent wetlands, as the project area is considered a Water of the U.S., and under the jurisdiction of the USACE. Because project work may be completed within wetland areas adjacent to the Truckee River regulated by the CWA, a §404 permit may be required. A state water quality certification permit, administered under Section §401 of the CWA, may also be required. The §404 and §401 permitting processes would be completed prior to commencement of the Proposed Action. Although a §404 permit may be required, it is anticipated however that a Nationwide Permit Number 27 would sufficient for this restoration effort.

Section 402 of the CWA regulates point source discharges of pollutants into Waters of the U. S. and specifies that storm water discharges associated with construction activity be conducted under NPDES guidance. Storm water discharges as a result of construction of the proposed project would be limited to ground-disturbing activities outside the ordinary high water mark. All such activities would be evaluated for compliance with NPDES guidance; an NPDES permit for construction would be required and a Storm Water Pollution Prevention Plan (SWPPP) for the project would be developed and kept current by the contractor and retained on file at the construction site.

To avoid direct effect to migratory birds protected by the MBTA, clearing of woody vegetation and other work would be scheduled between August 15 and April 15, outside of the normal breeding season for many avian species. Should vegetation removal and other work be implemented during the breeding season (April 15-August 15), pre-construction breeding bird surveys would be conducted and monitoring performed to assure avoidance of effect to migratory birds and associated avian species.

To address Endangered Species Act (ESA) compliance, a Biological Assessment (BA) was written to determine the effects of the proposed action on federally listed species. Based on this document as well as coordination between Reclamation and USFWS, it was determined that this project would have *No Effect* on federally listed species within the project area. Pursuant to the ESA, consultation with USFWS is not required when a *No Effect* determination is made.

Reclamation has coordinated with the SHPO for purposes of NHPA Section 106 compliance. The Project is committed to avoidance of any TCPs in the project area. Should evidence of possible scientific, prehistoric, historic, or archeological data be discovered during the course of this action, work would cease at that location and the area archaeologist would be notified by phone immediately, with the location and nature of the findings. Care would be exercised so as not to disturb or damage artifacts or fossils uncovered during operations, and the proponents would provide such cooperation and assistance as may be necessary to preserve the findings for removal or other disposition by the Government.

In addition to compliance with permitting requirements, the following early environmental commitments are included as part of the Proposed Action:

1. Should a bald eagle be observed within 0.25 mi. upstream or downstream of the active project site in the morning before project construction activity starts, or following breaks in project construction activity, the construction crew would be required to suspend all activity until the bird leaves on its own volition, or if the Reclamation biologist, in consultation with the USFWS, determines that the potential for harassment is minimal. However, if a bald eagle arrives during project construction activities or if a bald eagle is observed beyond the specified distance, construction would not need to be interrupted.
2. Disturbance of riparian vegetation would be limited to the minimum amount necessary to achieve rehabilitation objectives, in order to minimize habitat alteration and limit the effects of erosion and sedimentation. Mitigation for vegetation losses would include replanting of

willow and cottonwood (the dominant riparian species). In order to preserve and enhance existing vegetation profiles, these species were chosen for rehabilitation efforts. Riparian vegetation bench elevations would be set so that plantings and eventual root systems would have access to groundwater during low flow conditions. Wild Rose and Golden Current would also be planted to promote a more diverse habitat for wildlife species.

3. Cottonwood plantings are planned for bank areas while bands of willow wattles would be placed on the toe of slopes and closer to low flow water surface elevations. Cottonwoods would be planted using pole and container plantings. Pole plantings would have a density of 6-10 foot on center.
4. All pole plantings may be protected with installed deer fencing to initially to prevent animal damage.
5. The reestablishment of vegetation would be monitored by Cities and irrigation water would be provided, if necessary, to ensure successful establishment of re-vegetated areas.
6. To minimize soil erosion and increased turbidity in the Truckee River during rain storms, standard storm water BMPs would be used to minimize runoff during project implementation.
7. Fugitive dust would be suppressed by spreading water over disturbed areas where heavy equipment is working during dry conditions.

Standard BMPs would be used to manage water runoff during construction activities to prevent runoff during rainstorms from causing an unnaturally high level of sediment loading in the river and/or drain. The contractor would utilize straw bales, compost rolls and wattles and silt fences placed at strategic locations to manage water runoff in the construction areas.

6 CONSULTATION AND COORDINATION

This section serves as the public involvement summary report of activities on the environmental compliance process pursuant to the National Environmental Policy Act (NEPA). It also includes information on consultation and coordination activities.

6.1 Introduction

The lead federal agency for this EA is the U.S. Department of the Interior, Bureau of Reclamation working in coordination with the Cities of Reno and Sparks, Nevada. In preparation of this EA, formal or informal coordination or information sharing was conducted with the following entities:

City of Reno, Nevada
City of Sparks, Nevada
Fallon Paiute Shoshone Tribes
Nevada Department of Wildlife
Nevada Division of Environmental Protection
Nevada Division of State Lands
Nevada Rare Plant Technical Council
Nevada State Historic Preservation Officer
Nevada Trout Unlimited
Pyramid Lake Paiute Tribe
Reno Gazette Journal
Reno News and Review
Reno Sparks Indian Colony
State Assembly 24: David Bobzien
State Assembly 27: Shelia Leslie
State Assembly 30: Debbie Smith
State Assembly 31: Bernie Anderson
State Assembly 32: John Marvel
State Senate District 1: Bernice Matthews
State Senate District 2: Maurice Washington
The Honorable Harry Reid, United States Senate, Nevada
The Honorable John Ensign, United States Senate, Nevada
The Nature Conservancy
Truckee Carson Irrigation District
Truckee Meadows Region Planning Agency
Truckee Meadows Water Reclamation Facility
Truckee River Flood Project
U.S. Army Corps of Engineers
U.S. Congressman-Elect Dean Heller, Nevada
U.S. District Court Water Master – Truckee River
U.S. Fish and Wildlife Service
Washoe and Storey Counties
Washoe Storey Conservation District

6.2 Agency consultation

Concurrent with preparation of this document, agency coordination and consultation was conducted and are described in this section.

6.2.1 Endangered Species Act Consultation

Section 7 of the Endangered Species Act of 1973, as amended (ESA), prohibits Federal agencies from authorizing, funding, or carrying out activities that are likely to jeopardize the continued existence of a listed species or destroy or adversely modify its critical habitat. By coordinating with FWS before initiating projects, agencies review their actions to determine if these could adversely affect listed species or their habitat. If a may affect determination is made, then either informal or formal consultation is initiated with USFWS. Through consultation, FWS works with other Federal agencies to help design their programs and projects to conserve listed and proposed species. However, if a No Effect determination is made, no consultation with USFWS is required. Regulations for the consultation process can be found at 50 CFR Part 402.

Reclamation has concluded that the proposed action will have a No Effect determination on federally listed species; therefore, no consultation with USFWS was initiated. However, early coordination with USFWS occurred for the project and was essential in making this determination.

6.3 Public Involvement

Public involvement is a process by which interested and affected individuals, organizations, agencies, and governmental entities are consulted and included in the decision making process. The public involvement process is used to solicit public input on issues surrounding the action and alternatives development as well as to inform the public regarding studies performed for the document. The following is a summary of the public involvement efforts conducted in the above-referenced project in conjunction with NEPA requirements.

6.4 Tribal Consultation:

Four tribes were consulted with and provided information on the project: Fallon Paiute Shoshone Tribes, Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, and the Washoe Tribe of Nevada and California. A tribal consultation letter was sent on May 29, 2007 to introduce the project, notify tribes of the upcoming public meeting and request their attendance at a joint tribal consultation meeting. On **June 14, 2007**, a tribal consultation meeting was held with representatives from each of the following tribes—Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, and the Washoe Tribe of Nevada and California to specifically elicit tribal comments and input concerning the proposed project scope. Betsy Rieke, former Reclamation Area Manager, attended the meeting. Mitchell Blum, HDR Project Manager, gave a presentation of the project. Caryn Huntt DeCarlo, from Reclamation, gave an overview of NEPA, NHPA and the NEPA schedule.

Attendees asked general questions regarding the ability of the new project to withstand high flows, the types of rock to be used, the construction schedule, the control of invasive species, etc. Many of these initial questions are no longer applicable due to change in the project design. No issues that would threaten the project's progress were raised.

A joint tribal field trip to the project site was held on September 10, 2007 with attendees from the Pyramid Lake Paiute Tribe, Reno-Sparks Indian Colony, and the Washoe Tribe of Nevada and California. An additional field trip to the site was held on September 8, 2008 with the Reno Sparks Indian Colony as part of a larger field trip they were attending with The Nature Conservancy on other restoration projects.

6.4.1 Public Involvement:

A Draft Public Involvement Strategy/Technical Memorandum was completed, dated **June 15, 2007**. The Technical Memorandum included the following items:

- Proposed schedule of public involvement activities
- Outline of stakeholder identification and tracking efforts
- List of public involvement opportunities
- Description of public notification activities
- Public workshop outline
- Public Comment Strategy
- Format for the public meetings scoping report
- Draft EA notification, meetings, and comments
- Public Notice for Final EA/FONSI

A public open house meeting was held on **Thursday, June 21, 2007** at the Bartley Ranch Regional Park. The purpose of the public open house meeting was to gather public input and disseminate information on the proposed content of the Environmental Assessment (EA) for the proposed restoration activities of the Truckee River below Derby Dam Riparian and Stream Restoration project.

Legal notices for the public meeting were placed in the Reno Gazette-Journal and in the Sparks Daily Tribune on **June 7, 2007** and on **June 17, 2007**. A separate, paid announcement of the workshop was published in the Reno Gazette-Journal **on June 17, 2007**. In addition, a public service announcement (PSA) was prepared and disseminated to public television station KNPB and public radio station KUNR. The PSA was translated into Spanish and sent to KRNV on June 14, 2007. Printed notices were mailed to 26 interested parties and stakeholder agencies.

The public workshop was conducted in an open house format. Five stations were set up and posters outlining the project design, biological issues, and the NEPA process were displayed. Exhibits 21-23 below illustrate the meeting posters. Six people attended the meeting representing governmental, non-governmental, and stakeholder agencies.

The 30-day public comment period for scoping ended on July 20, 2007. The following spreadsheet contains comments received from the public and/or interested stakeholders (Exhibit 24).

Future public involvement and notifications include the following:

- Announcement of EA and Draft FONSI availability for 30-day public comment period.

Exhibit 21: Project Description Poster

Exhibit 22: NEPA Process Poster.

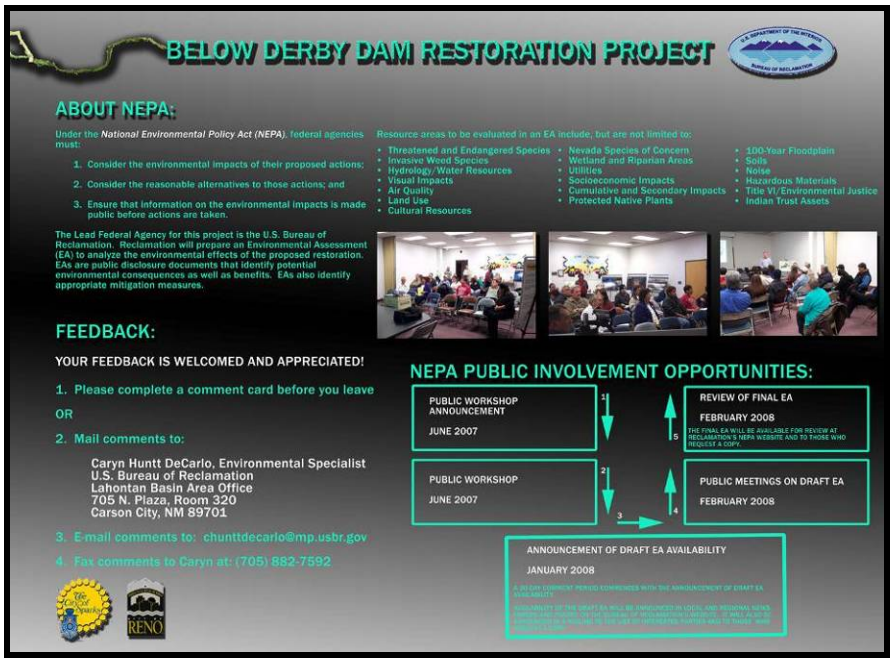


Exhibit 23: Threatened and Endangered Species Poster.

Exhibit 24: Summary of Comments Received from Public and/or Interested Stakeholders

Date	Commenter	Agency	Comments
7/5/07	Randy Pahl TMDL Coordination	Nevada Division of Environmental Protection	Will the low flow channel maintain itself over time or will there be problems with sedimentation?
7/16/07	Sue Gilbert	Nevada Division of Water Resources	Supports the Scoping for Below Derby Dam Restoration Project as written.
6/27/07	Catherine Cuccaro	Nevada Department of Transportation	"Any encroachment within the state right-of-way will require a permit. Please contact the NDOT District II Permit Office at 775-834-8330 for more information.
6/28/07	Joseph E. Ditucci	Nevada Division of Water Resources	The Department of Conservation and Natural Resources, Division of Water Resources, is the State agency responsible for operation and maintenance of the channel of the Truckee River from the Glendale Street Bridge to Wadsworth. This responsibility comes from an agreement with the U. S. Army Corps of Engineers as a result of the flood control work done in the 1950's and 1960's. The operation and Maintenance Manual for the Truckee River and Tributaries requires that a flow of 6,000 cfs be maintained within the bed and banks of the river between Reno and Wadsworth, Nevada. A Letter of Authorization must be obtained from this office before work can begin. Nevada Division of Water Resources should be contacted as soon as possible to determine what supporting information will be required for authorization, so as to prevent any delays of the project. Additionally, the project cannot adversely impact the water rights of others downstream during or after construction.

7 LIST OF PREPARERS

Name	Qualifications (Expertise, professional discipline, experience)	Contribution
Mitchell L. Blum, CFM	M.S., Hydrology, University of Nevada Reno. B.A., Environmental Sciences/Studies, Ithaca College. Project Manager / Hydrologist 8 years of experience in wetlands and riparian ecosystem management and numerous water resource engineering projects. Project experience also includes stream and wetland rehabilitation design and analysis; fluvial geomorphic studies; hydrologic modeling and hydraulic modeling data; unsteady flow models for dam breach analysis; hydrologic and hydraulic modeling in support of storm water BMPs; flood studies; and storm water drainage design and analysis	Technical team leader; resource management, development of conceptual design elements for the proposed alternative
Rick M. Billings	M.S., Environmental Sciences/Studies (Fisheries Science), University of Arizona. B.S. Environmental Sciences/Studies (Fisheries Science), New Mexico State University. NEPA Documentation Manager 28 years of experience in permitting, water quality, NEPA processes and impact analysis projects in the western United States. NEPA experience includes documentation, public involvement and the analysis of environmental impacts upon species of concern, both aquatic and terrestrial, riparian areas, wetlands, recreational resources and others, most recently with large water development projects.	Oversight of Environmental Assessment document preparation. Biological resources analysis, including endangered species, biology, riparian biology
Byron T. Kesner, CHMM	M.A. Geography, University of Georgia B.S. Forestry, Stephen F. Austin State University 22 years of technical and regulatory compliance experience and NEPA Documentation. NEPA experience includes documentation, and the analysis of environmental impacts upon the physical environment (soils, land use, storm water management, water resources) and hazardous materials management.	Non-Biological Resources analyses

Name	Qualifications (Expertise, professional discipline, experience)	Contribution
Lisa Powell, MLA	M.L.A. Landscape Architecture, University of New Mexico. 5 years of experience in planning, landscape design, and public involvement. Her experience includes coordination of community meetings, documenting and synthesizing community input, designing materials for community meetings, presenting design management concepts to community forum participants, coordinating steering committee design charrettes, and facilitating community visioning workshops.	Social environmental analysis Economic environmental analysis Public Involvement
Aliyah Daigneaux	B.F.A., Visual & Performing Arts, New Mexico Highlands University 14 years of experience as a technical editor. She has written and reviewed NEPA and other environmental submittals for transportation projects and performed research for urban planning studies	Desktop publishing, document design, and technical editing
Kelly Sims, PHR	Master of Public Administration, University of New Mexico. B.A., Sociology, University of New Mexico. 1 year of experience providing technical editing and document control for environmental and water resources projects, performing quality control reviews on all project documents including initial site assessments (ISAs), and NEPA environmental assessments (EAs), scopes of work, and general correspondence. Also plans and coordinates public outreach activities.	Administrative Record Coordinator Public Involvement Desktop publishing, document design, and technical editing
Caryn Huntt DeCarlo	M.S. Natural Resources Management-Forestry University of Nevada Reno B.S. Natural Resources Management-Forestry, University of Nevada Reno Reclamation EA Project Lead – Natural Resources Specialist 20 years experience in federal agency natural resources management/NEPA (Forest Service and Bureau of Reclamation).	EA process coordination and EA review/approval

Name	Qualifications (Expertise, professional discipline, experience)	Contribution
Patrick Mangan	Project Manager and Biologist in Reclamation's Technical Service Center 29 years experience with federal agency environmental and biological compliance and Program Management (Bureau of Reclamation, Minerals Management Service, Army Corps of Engineers and US Fish and Wildlife Service).	EA and ESA coordination

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